Transportation, Distribution & Logistics

Career Cluster Resources for Transportation, Distribution and Logistics

www.careerclusters.org

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Introduction

The States' Career Cluster Initiative
9/01/02

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The U.S. Department of Education Office of Vocational and Adult Education (OVAE) has identified 16 career clusters representing career opportunities for the 21st century economy. These clusters will frame student opportunities as they pursue postsecondary education and a wide range of career opportunities from front-line to professional and managerial careers.

Helping students make their dreams become a reality was the driving force behind the nation's Career Clusters initiative launched June 1, 2001. Twelve lead states and the District of Columbia were partners in the development of the tools supporting eleven career clusters which, when combined with the five clusters that have already been developed, will represent all career possibilities.

The National Association of State Directors for Career and Technical Education Consortium (NASDCTEc) and their Board of Directors assumed leadership for coordinating the project. This in itself was unique for a project of this scope. The Board and the State Directors organization believed that this initiative was of such potential impact on the Career Technical delivery system in the country that they needed to play this leadership role in the project, assuring that the materials had utility in their states once completed. Therefore, the NASDCTEc in conjunction with the State of Oklahoma (the project fiscal agent) prepared and submitted a proposal to OVAE in January of 2001. This proposal was funded at a $2.2 million dollar level, with expectations of a second year of funding of $2.5 million. The plan to develop eleven curriculum frameworks was very aggressive, given that each of the prior projects, designed to develop and pilot test materials for a single cluster, had received in excess of $1 million dollars for their multiyear development work.

The project was designed to establish curriculum frameworks and supportive materials for each cluster, with a broad-based advisory committee for each cluster, led by a state. There was also a National Advisory Committee consisting of members from each of the cluster committees, along with other stakeholders. The National and State Cluster advisory committees were responsible for identifying the frameworks, pathway and foundation knowledge and skills, and other supportive

materials. The committees included representatives from states, schools, education and training, business and industry, associations, and others directly impacted by the materials.

The development of materials for each of the eleven clusters was led by a different state, with business and industry at the helm. The lead states included: Idaho and Iowa (jointly leading the Agriculture, Food and Natural Resources cluster), Pennsylvania (Architecture and Construction), Ohio (Marketing, Sales and Service), North Dakota (Finance), West Virginia (Hospitality and Tourism), South Carolina (Business, Management and Administration), Kentucky (Human Services), Arkansas (Law, Public Safety and Security), North Carolina (Science, Technology, Engineering and Mathematics), Michigan (Education and Training), and Oklahoma and the District of Columbia/Washington D.C. (jointly leading the Government and Public Administration cluster).

The five additional career clusters included Health Science led by the State of Utah, Manufacturing led by the State of Indiana, Arts, Audio Video Technology and Communications led by the V-TECS Consortium, Information Technology led by the Educational Development Center, Inc., and Transportation, Distribution and Logistics Cluster led by the State of Illinois. These clusters plan to complete their work by June 30 of 2003.

To facilitate and coordinate the developmental work of the Cluster Initiative, staff was identified and housed at the Oklahoma Department of Career and Technical Education. The staff consisted of four Cluster Coordinators: Marsha Daves, Greg Dewald, Curtis Shumaker, and Pam Stacey. Additionally, Denise Christy provided research and web development support, Lisa Batchelder provided financial support, and Karan Smith provided administrative support.

Development work for the States' Career Clusters Initiative began June 1, 2001, and the first meeting of lead states, OVAE staff, and cluster staff was held in Oklahoma City in mid-June. At this meeting, project objectives, general direction, timelines, and the initial research goals were identified. This work continued through the fall and winter of 2001 and included the identification of cluster advisory committee members, the development of cluster frameworks based on the prototype cluster models provided by V-TECS, and the identification of occupations and draft pathways along with degrees and certificates associated with the career specialties/occupations in each of the clusters.

In January of 2002, the lead state teams were brought together in Phoenix to begin the process of developing knowledge and skill statements for each of the cluster pathways and foundations. Contracted writers and lead state cluster advisory committee members, depending upon

the decisions of cluster leadership, carried out this work. A part-time editor in Oklahoma provided consistency across the cluster knowledge and skill statements. One concern that was addressed early in the process was the need for a "common look and feel" across the clusters. Ultimately, this was accomplished not only for the eleven clusters in the States' Career Clusters Initiative, but also through close cooperative relationships between the projects, all the cluster knowledge and skill statements were developed (or retro-fitted) using the same format. This format includes a knowledge/skill statement with associated performance elements and measurement criteria. This format provides the tools needed for curriculum and assessment developers as they take the materials to the classroom.

The National Advisory Committee met in March of 2002, and reviewed the curriculum frameworks, credentials list, and lead state advisory committee memberships and structures, and forwarded those materials to the Executive Committee for the Project. The Executive Committee, made up of the Board of the NASDCTEc, also met in March, approved the materials and discussed the future actions needed to assure implementation of the cluster materials.

Originally, the project was designed for a minimum of two years and was to include the identification of 110 pilot test sites across the country, along with the development of assessments and certifications for the clusters. The Office of Vocational and Adult Education, however, determined in November of 2001 that the goals of the project were "too broad", and terminated the project as of September 30, 2002.

Development of the products needed for curriculum and assessment was fast-tracked, with the knowledge and skill statements, performance elements and measurement criteria ready for validation by July 15, 2002. This was the result of a major effort of lead state advisory committees and staff responding to the shortened timeline and the need for quality product.

Given the efforts of the developmental teams, cluster advisory committee members were able to review and validate the knowledge and skills and supporting elements. Additionally, a national web-based validation was conducted from July 15 to August 15, 2002. All 50 states were invited to a dissemination meeting held in Charleston, South Carolina Sept 13, 2002, where the materials were distributed to participants for their use in updating their curriculum.

For further information on the status of the materials, go to the web-site, http://www.careerclusters.org/.
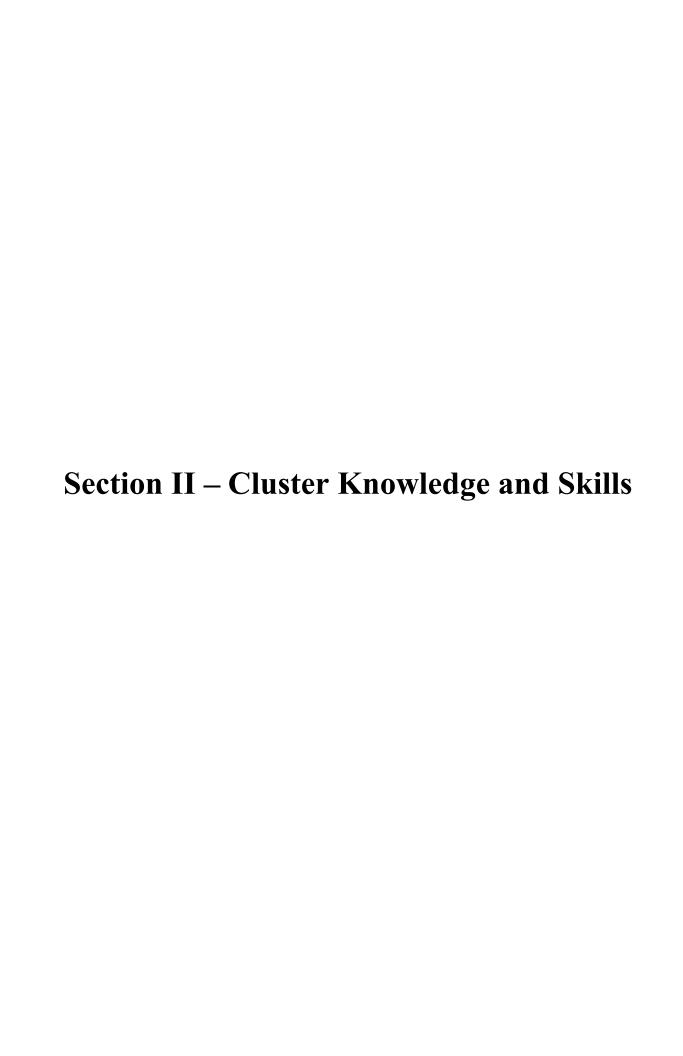
Section I – Pathway Model

Transportation, Distribution & Logistics

Planning, management, and movement of people, materials, and goods by road, pipeline, air, rail and water and related professional and technical support services such as transportation infrastructure planning and management, logistics services, mobile equipment and facility maintenance.

Sample of Career Specialties / Occupations						
Air/Space Transportation: Transportation managers—air * Airplane pilots/copilots * Commercial pilots * Flight engineers * Flight attendants *Dispatchers-air * Traffic managers * Air traffic controllers *Aircraft cargo handling supervisors * Airfield operations specialists * Other airlines operations and support jobs **Rail Transportation:** Transportation managers—rail * Dispatchers-rail * Traffic managers * Locomotive engineers, * Locomotive firers * Railyard conductors and yardmasters * Railroad brake, signal and switch operators (including train crew members and yard workers) * Railyard engineers, dinkey operators, and hostlers * Other railyard and terminal operations and support jobs **Water Transportation:** Transportation managers—water * Dispatchers—water * Traffic managers * Captains * Mates * Pilots of water vessels * Sailors and marine oilers * Able seamen * Ordinary seamen * Ship and boat captains * Ship engineers * Motorboat operators * Bridge and lock tenders * Other port/harbor/waterway/marina operations and support jobs **Road Transportation** Transportation managers—road * Dispatchers--Truck/bus/taxi, traffic managers * Truck drivers-heavy * Truck drivers-tractor-trailer * Truck drivers—light or delivery services * Bus drivers-transit and intercity * Bus drivers-school * Taxi drivers and chauffeurs * Truck/bus/taxi terminal operations and support jobs **Transit Systems:** Transportation managers—mass transit * Dispatchers-bus * Traffic managers Dispatchers-rail * Traffic managers * Bus drivers—transit and intercity * Subway and streetcar operators * Other terminal operations and support jobs	Logisticians * Logistics managers * Logistics Engineers * Logistics analysts * Logistics consultants * International logistics	Warehouse managers * Storage and distribution managers * Industrial and packaging engineers * Traffic, shipping and receiving clerks * Production, planning, expediting clerks * First-line supervisors/managers of helpers * Laborers, and material movers-hand * First-line supervisors/managers of transportation and material-moving machine and vehicle operators *Laborers and freight, stock and material movers, hand * Car, truck and ship loaders * Packers and packagers-hand * Other packaging/packing/material handling and moving jobs	**Facility:** Facility maintenance managers and engineers * Industrial equipment mechanics *Industrial electricians, * Electrical/electronic technicians * Other facility/terminal maintenance jobs **Mobile Equipment:** General--Mobile equipment maintenance managers * Electrical and electronic installers and repairers—transportation equipment * Mobile heavy equipment mechanics Air/Space—Aerospace engineering and operations technicians * Aircraft mechanics and service technicians * Airframe mechanics * Power plant mechanics * Aircraft engine specialists * Aircraft body and bonded structure repairers * Avionics technicians. Water—Motorboat mechanics * Ship mechanics and repairers * Motorboat mechanics * Automotive/truck mechanics and body repairers Rail—Rail car repairers * Signal and track switch repairers * Rail locomotive and car mechanics and repairers Road—Electronic equipment installers and repairers—motor vehicle * Automotive body and related repairers * Automotive glass installers and repairers * Automotive service technicians and mechanics * Automotive master mechanics * Automotive specialty technicians * Bus and truck mechanics and diesel engine specialists * Motorcycle mechanics * Bicycle repairers * Tire repairers and changers	General—Intermodal--Urban and regional planners * Civil engineers * Engineering technicians * Surveying and mapping technicians * Government service executives * Environmental compliance inspectors Air/Space—Air traffic controllers * Aviation inspectors Road—Traffic engineers * Traffic technicians * Motor vehicle inspectors * Freight inspectors, Rail—Railroad inspectors Water—Marine cargo inspectors * Vessel traffic control specialists Transit—Public transportation inspectors Other---Other government agency managers * Regulators * Inspectors, other federal/state/local transportation agency jobs	Health and safety managers * Industrial health and safety engineers * Environmental scientists and specialists * Environmental science and protection technicians * Environmental managers and engineers * Environmental compliance inspectors * Safety analysts	Marketing managers, * Sales managers * Sales representatives—transportation/logistics services * Reservation, travel and transportation agents/clerks * Cargo and freight agents * Customer service managers, * Customer service representatives * Customer order and billing clerks * Cashiers, counter and rental clerks
Pathways						
Transportation Operations	Logistics Planning and Management Services	Warehousing and Distribution Center Operations	Facility and Mobile Equipment Maintenance	Transportation Systems/ Infrastructure Planning, Management, and Regulation	Health, Safety and Environmental Management	Sales and Service
Cluster K&S						
Cluster knowledge and skills ◆ Academic Foundations ◆ Communications ◆ Problem Solving and Critical Thinking ◆ Information Technology Applications ◆ Systems ◆ Safety, Health and Environmental ◆ Leadership and Teamwork ◆ Ethics and Legal Responsibilities ◆ Employability and Career Development ◆ Technical Skills						

Section II – Cluster Knowledge and Skills

Cluster Knowledge and Skill Statement

Academic Foundations

Statement: **Demonstrate achievement of cluster specific academic knowledge and skills required to pursue the full-range of career and post-secondary education opportunities within the career cluster.**

Statement: **High school graduation requirements and state standards must be met in addition to these academic knowledge and skills.**

Cluster Knowledge and Skill Statement

Communications

Statement: Comprehend and use reading strategies to learn meaning, technical concepts and vocabulary.

Performance Element: Determine and use reading strategy (skimming, reading for detail, reading for meaning and critical analysis) to determine purpose of text.

Measurement Criteria: Use reading strategy to achieve intended purpose.

Measurement Criteria: Identify complexity of text.

Measurement Criteria: Evaluate and explain relevance, accuracy and appropriateness to purpose.

Performance Element: Understand content, technical concepts and vocabulary to analyze information and follow directions.

Measurement Criteria: Identify issues and questions.

Measurement Criteria: Analyze information presented in a variety of formats, such as tables, lists, figures, etc.

Measurement Criteria: Identify key technical concepts and vocabulary.

Performance Element: Interpret, transcribe and communicate information, data, and observations to apply information learned from reading to actual practice.

Measurement Criteria: Interpret technical materials used.

Measurement Criteria: Summarize overall meaning of text.

Measurement Criteria: Identified strategies for applying information learned to task or new situation.

Statement: Locate, organize and reference written information from various sources to communicate with co-workers and clients/participants.

Performance Element: Locate written information to communicate with co-workers and clients/participants.

Measurement Criteria: Conduct search of information on topic using card catalog, keywords, and/or search engines.

Measurement Criteria: Locate variety of resources such as books, journals, and electronic forms including the Internet.

Measurement Criteria: Select the resources that best relate to the topic.

Performance Element: Organize information to use in written and oral communications.

Measurement Criteria: Read and take notes from selected resources.

Measurement Criteria: Prepare outline that emphasizes major points with supporting data.

Measurement Criteria: Present information in organized, easy-to-follow manner.

Performance Element: Document the source and proper reference for written information.

Measurement Criteria: Prepare a bibliography according to MLA, APA, CBE, Chicago, depending on the warranted language style.

Measurement Criteria: Use parenthetical, footnotes and endnotes accurately.

Measurement Criteria: Follow plagiarism and copyright rules and regulations.

Statement: Use correct grammar, punctuation and terminology to write and edit documents.

Performance Element: Compose multi-paragraph writing clearly, succinctly, and accurately to write documents.

Cluster Knowledge and Skill Statement

> ***Measurement Criteria:*** *Organize and arrange information for effective coherence.*
>
> ***Measurement Criteria:*** *Report relevant information in order of occurrence.*
>
> ***Measurement Criteria:*** *Interpret information, data, and observations correctly.*
>
> ***Measurement Criteria:*** *Present main ideas and supporting facts.*

Performance Element: Use description of audience and purpose to prepare written documents.

> ***Measurement Criteria:*** *Use technical terms and concepts.*
>
> ***Measurement Criteria:*** *Incorporate and use references effectively and accurately.*
>
> ***Measurement Criteria:*** *Report objective and/or subjective information to achieve the purpose and meet the needs of the audience.*

Performance Element: Use correct grammar, spelling, punctuation and capitalization to prepare written documents.

> ***Measurement Criteria:*** *Use correct grammar and sentence structure.*
>
> ***Measurement Criteria:*** *Use correct spelling.*
>
> ***Measurement Criteria:*** *Use correct punctuation and capitalization.*

*Statement: **Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences.***

Performance Element: Prepare oral presentation to provide information for intended purpose and audience.

> ***Measurement Criteria:*** *Know subject matter well enough to be independent of written aids.*
>
> ***Measurement Criteria:*** *Identify characteristics of the audience and adjust to the level of interest and understanding.*
>
> ***Measurement Criteria:*** *Use technical terms and concepts correctly.*
>
> ***Measurement Criteria:*** *Information is well-organized in logical sequences that make the major points well-understood by the audience.*

Performance Element: Identify and prepare support materials to accompany oral presentation.

> ***Measurement Criteria:*** *Utilize media and visual aids appropriate to understanding of topic.*
>
> ***Measurement Criteria:*** *Prepare easy-to-view visual aids and support materials that are without error.*
>
> ***Measurement Criteria:*** *Operate equipment used with support materials smoothly and efficiently.*
>
> ***Measurement Criteria:*** *Rehearse presentation.*

Cluster Knowledge and Skill Statement

Performance Element: Deliver presentation to sustain listener's attention and interest.

Measurement Criteria: Deliver presentation without grammatical error.

Measurement Criteria: Speak clearly with appropriate volume, rate and gestures while making and maintaining appropriate eye contact with the audience.

Measurement Criteria: Use support materials in the presentation that enhance the understanding of the topic and the interest level of the audience.

Measurement Criteria: Stay within presentation time parameters.

Measurement Criteria: Use verbal and nonverbal feedback strategies to engage discussion and adjust message and delivery.

Measurement Criteria: Respond to questions and comments on presentation.

Statement: Interpret verbal and nonverbal cues/behaviors to enhance communication with co-workers and clients/participants.

Performance Element: Interpret verbal cues/behaviors to enhance communication.

Measurement Criteria: Identify verbal cues/behaviors.

Measurement Criteria: Observe voice tempo, quality, tone and volume.

Measurement Criteria: Explain message conveyed by verbal cues/behaviors.

Performance Element: Interpret nonverbal cues/behaviors to enhance communication.

Measurement Criteria: Identify nonverbal cues/behaviors.

Measurement Criteria: Observe eye contact, facial expressions, posture, gestures and other body language.

Measurement Criteria: Explain message conveyed by nonverbal cues/behaviors.

Statement: Apply active listening skills to obtain and clarify information.

Performance Element: Interpret message/information given to clarify information.

Measurement Criteria: Indicate familiarity of topic being presented.

Measurement Criteria: Respond accordingly using appropriate verbal and nonverbal language.

Measurement Criteria: Answer questions correctly and able to provide feedback in own words.

Performance Element: Respond with restatement and clarification techniques to clarify information.

Measurement Criteria: Ask questions to seek or confirm understanding.

Measurement Criteria: Paraphrase and/or repeat information.

Measurement Criteria: Record notes and summarize information from written notes.

Statement: Develop and interpret tables, charts, and figures to support written and oral communications.

Performance Element: Develop tables, charts and figures to support written and oral communication.

Measurement Criteria: Compile facts and arrange in an organized manner for a table, chart or figure.

Measurement Criteria: Document sources of data.

Measurement Criteria: Determine most appropriate way to display data for effective coherence.

Measurement Criteria: Prepare table, chart, graph or figure for inclusion in publication or presentation.

Cluster Knowledge and Skill Statement

Performance Element: Interpret tables, charts and figures used to support written and oral communication.

    Measurement Criteria: *Evaluate reference or source of data for authenticity and reliability.*

    Measurement Criteria: *Explain information presented in tables, charts and figures.*

    Measurement Criteria: *Prepare written summary of findings expressed in tables, charts and figures.*

Cluster Knowledge and Skill Statement

Problem Solving and Critical Thinking

Statement: Formulate ideas, proposals and solutions to problems.

Performance Element: Clarify the problems or issues to be addressed and the objectives.

Performance Element: Identify constraints and parameters.

Performance Element: Obtain and analyze available information and statistical data.

Performance Element: Generate alternative ideas, proposals, and solutions that would solve the problem.

Performance Element: Evaluate alternative solutions.

Performance Element: Identify the best solution based on risks, costs, and benefits.

Performance Element: Present the solution and the logic and rationale for the solution.

Statement: Analyze and evaluate ideas, proposals, and solutions to problems.

Performance Element: Confirm definition of problem and objectives.

Performance Element: Confirm constraints and parameters.

Performance Element: Evaluate the basic assumptions.

Performance Element: Evaluate the quality of information used to support solution.

Performance Element: Evaluate the analysis of data used to support solution.

Performance Element: Evaluate the logic and reasoning used to develop solution.

Performance Element: Evaluate the risks, costs, and benefits of testing and implementing the solution.

Performance Element: Make recommendations on supporting, changing, or not supporting the solution.

Statement: Develop solutions to performance problems using a structured problem-solving process.

Performance Element: Describe the problem completely and accurately using data and graphs and charts.

Performance Element: Develop and present a comprehensive mapping of potential root and indirect causes (e.g., fishbone diagrams).

Performance Element: Identify and evaluate alternative solutions.

Performance Element: Test, monitor and evaluate best solutions.

Performance Element: Develop plans to fully implement solutions to address performance problem.

Cluster Knowledge and Skill Statement

Information Technology Applications

Statement: Use Personal information Management (PIM)/ Productivity applications.

Performance Element: Manage personal schedule and contact information.

Measurement Criteria: *Create and update a to-do list with due dates, status, category, and priorities.*

Measurement Criteria: *Add, delete, and edit schedules. Use features such as recurring events, multiple-day, and reminders.*

Measurement Criteria: *Group and categorize contact information.*

Performance Element: Create memos and notes.

Measurement Criteria: *Create notes, informal memos, and reminders.*

Statement: Use electronic mail applications.

Performance Element: Use email to share files and documents.

Measurement Criteria: *Open (or detach) and save attachments to the intended location.*

Measurement Criteria: *Select appropriate strategy (attachment vs. link) for sharing information.*

Measurement Criteria: *Use appropriate e-mail security measures. (e.g., use virus scan to check virus, do not download attachments from unknown sources.)*

Performance Element: Use email to communicate within and across organizations.

Measurement Criteria: *Create e-mail messages in accordance with established business standards (e.g., grammar, word usage, spelling, sentence structure, clarity.)*

Measurement Criteria: *Manage mailboxes by deleting and organizing messages.*

Measurement Criteria: *Use e-mail features such as reply requested, return receipt, out-of-office notices*

Statement: Use Internet applications.

Performance Element: Access and navigate Internet (e.g., use a web browser).

Measurement Criteria: *Navigate between and within web sites.*

Measurement Criteria: *Access and use multiple browser windows.*

Measurement Criteria: *Differentiate between secure and non-secure web sites.*

Measurement Criteria: *Download a file from a web site to the desired location.*

Performance Element: Search for information and resources.

Measurement Criteria: *Select search engine(s) appropriate for desired information.*

Measurement Criteria: *Identify and articulate an information search.*

Measurement Criteria: *Use phrase search and simple Boolean logic (AND, OR, NOT, NEAR).*

Measurement Criteria: *Refine search by modifying search terms.*

Performance Element: Evaluate Internet resources.

Measurement Criteria: *Prioritize Internet resources against search criteria.*

Measurement Criteria: *Look for corroboration and independent validation of information (do different sites reference each other, is the information consistent).*

Measurement Criteria: *Take action to clarify ambiguous or incomplete information.*

Statement: Use writing/publishing applications.

Cluster Knowledge and Skill Statement

Performance Element: Prepare simple documents and other business communications.

Measurement Criteria: *Create documents (letters, memos and reports) both with and without templates.*

Measurement Criteria: *Format text using basic formatting functions (e.g., paragraph spacing, margins, bullets, numbering).*

Measurement Criteria: *Employ word processing utility tools (e.g., track changes or thesaurus).*

Performance Element: Prepare reports and other business communications, integrating graphics and other non-text elements.

Measurement Criteria: *Use advanced formatting features (headers, footers, page numbering, styles).*

Measurement Criteria: *Customize tables (add borders and shading, merge rows and columns, adjust row/column sizes).*

Measurement Criteria: *Use inserts picture/object function to place graphics in document and adjusts text formatting accordingly.*

Measurement Criteria: *Employ document organization tools (e.g., outline, footnotes, and endnotes...).*

Performance Element: Prepare complex publications.

Measurement Criteria: *Make changes to format or layout of an existing complex publication or template (e.g., 8-page, 2-color newsletter with columns, sidebars, photos and graphics, multi-color output...).*

Measurement Criteria: *Organize content and standardize format from various sources.*

Measurement Criteria: *Create non-print output for publication (e.g., PDF, postscript).*

Statement: Use presentation applications.

Performance Element: Prepare presentations for training, sales and information sharing.

Measurement Criteria: *Create a new presentation using both text and content layouts.*

Measurement Criteria: *Change color scheme for a slide design.*

Measurement Criteria: *Create/edit external graphic elements (e.g., a scanned photo) and insert into a slide.*

Measurement Criteria: *Edit existing animations and action buttons.*

Measurement Criteria: *Create new slide transitions.*

Performance Element: Deliver presentations with supporting materials.

Measurement Criteria: *Create and distribute presentation handouts or speaker notes.*

Measurement Criteria: *Print either key slides or an entire presentation in handout or notes format.*

Measurement Criteria: *Create an automated slide show.*

Statement: Use spreadsheet applications.

Performance Element: Create spreadsheet.

Measurement Criteria: *Create new spreadsheet, based on a set of data where you must identify the appropriate structure (e.g., rows and columns) for data display and analysis.*

Measurement Criteria: *Apply cell type formatting (e.g., date, dollar, text and decimal) appropriate to data type.*

Cluster Knowledge and Skill Statement

>> *Measurement Criteria:* Add document identification (e.g., page numbers, dates, and titles in headers and footers).

>> *Measurement Criteria:* Print only relevant data so that it is readable (e.g., uses set print area to fit into one or multiple pages).

> **Performance Element: Perform calculations and analysis on data.**

>> *Measurement Criteria:* Write simple formulas.

>> *Measurement Criteria:* Use chart wizard to create a chart or graph from adjacent selections, with appropriate chart type and labels.

>> *Measurement Criteria:* Use filter and comparison criteria to find specific values in rows in a list.

>> *Measurement Criteria:* Build calculations using the formula wizard.

Statement: Use database applications.

> **Performance Element: Manipulate data elements.**

>> *Measurement Criteria:* Enter data using a form.

>> *Measurement Criteria:* Locate/replace data using search and replace functions.

>> *Measurement Criteria:* Process data using database functions (e.g., structure, format, attributes, relationships, keys).

> **Performance Element: Manage, analyze and report on interrelated data elements.**

>> *Measurement Criteria:* Search a database table to locate records.

>> *Measurement Criteria:* Sort data using single- and multiple-field sorts.

>> *Measurement Criteria:* Perform single- and multiple-table queries (e.g., create, run, save).

>> *Measurement Criteria:* Print forms, reports, and results of queries.

>> *Measurement Criteria:* Verify accuracy of output.

Statement: Use collaborative/groupware applications.

> **Performance Element: Facilitate group work through management of shared schedule and contact information.**

>> *Measurement Criteria:* Add, delete, and edit group schedule. Use features such as recurring events, multiple-day, and reminders.

>> *Measurement Criteria:* Create a meeting request or task assignment.

>> *Measurement Criteria:* Add or delete contacts in a shared address book.

> **Performance Element: Facilitate group work through management of shared files and online information.**

>> *Measurement Criteria:* Organize, store and share files in network directories (e.g., copy and delete files, create new folders, move documents between folders).

>> *Measurement Criteria:* Organize, store, and share files using a document library or database.

>> *Measurement Criteria:* Organize, store, and share files using web sites (e.g., post messages and upload/download files).

> **Performance Element: Facilitate group work through instant messaging or virtual meetings.**

>> *Measurement Criteria:* Participate in virtual group discussions and meetings.

>> *Measurement Criteria:* Send or respond to an instant message from a group list.

Statement: Use computer operations applications.

Cluster Knowledge and Skill Statement

Performance Element: Manage computer operations.

Measurement Criteria: *Install/uninstall an application.*

Measurement Criteria: *Connect ports of the computer to peripherals.*

Measurement Criteria: *Interrupt and restart applications or the computer when they freeze.*

Measurement Criteria: *Configure desktop environment and applications for efficient operation (e.g., create shortcuts, customize monitor size, customize menu bars).*

Measurement Criteria: *Apply basic commands of operating system software (e.g., create, rename and delete directories).*

Measurement Criteria: *Employ desktop operating skills (e.g., use mouse buttons and keyboard shortcuts).*

Performance Element: Manage file storage.

Measurement Criteria: *Differentiate between files and directories.*

Measurement Criteria: *Use folders or directories with meaningful names to store related files.*

Measurement Criteria: *Backup data periodically to a backup media (CD, disk, etc.) or server.*

Measurement Criteria: *Apply appropriate file and disk management techniques (e.g., defragment and rearrange files, reinstall backup data).*

Measurement Criteria: *Determine file organization (e.g., use appropriate directory structures and names).*

Performance Element: Compress or alter files.

Measurement Criteria: *Compress and uncompress files/folders using compression software.*

Measurement Criteria: *Convert file formats (e.g., convert MSExcel or MSWord format file to Adobe Acrobat (PDF) format).*

Measurement Criteria: *Convert existing files using utilities provided by the software (e.g., update files from older version of an application to be used in the newer version, convert file created by MSWorks to MSWord).*

Statement: Use computer-based equipment (containing embedded computers (or processors) used to control electromechanical devices).

Performance Element: Operate computer driven equipment and machines.

Measurement Criteria: *Operate equipment and machine with assistance.*

Measurement Criteria: *Secure needed supplies and resources.*

Measurement Criteria: *Follow power-up and log-on procedures.*

Measurement Criteria: *Interact with/respond to system messages using console device.*

Measurement Criteria: *Run applications/jobs in accordance with processing procedures.*

Measurement Criteria: *Follow log-off and power-down procedure(s).*

Statement: Use geographic information systems software.

Performance Element: Represent data on maps.

Performance Element: Locate physical addresses on maps.

Cluster Knowledge and Skill Statement

Performance Element: Estimate distances and travel times between two or more locations.

Performance Element: Produce and print maps.

Cluster Knowledge and Skill Statement

Systems

Statement: Explain the role and major functions of a TDL organization.

> **Performance Element: Describe and explain the mission of TDL organizations.**

> **Performance Element: Explain the role of TDL organizations within the industry.**

> **Performance Element: Define and explain the critical customers, suppliers, and stakeholders for the organization.**

> **Performance Element: Explain the major competitive challenges faced by the organization in the industry.**

> **Performance Element: Describe and explain the major internal functions and structure of the organization.**

Statement: Define and explain the major measures used by a TDL organization to manage and improve performance.

> **Performance Element: Define and explain the measures for financial performance (e.g. profitability, cost reduction, asset utilization).**

> **Performance Element: Define and explain the measures for market performance (e.g., customer and sales/service growth).**

> **Performance Element: Define and explain the measures for service and internal operations performance (e.g., customer satisfaction, service quality, cycle time).**

> **Performance Element: Define an explain the measures for organizational compliance and health, safety and environmental performance (e.g., audit findings, emissions, lost time accidents).**

Statement: Explain the impact of economic, social, and technological changes on a TDL organization and its role in the TDL industry.

> **Performance Element: Explain the impact of economic changes including economic growth/decline, income growth, consumer confidence, interest rates, fuel and material costs).**

> **Performance Element: Explain the impact of social changes including consumer attitudes and preferences, demographics, population shifts).**

> **Performance Element: Explain the impact of technological changes including transportation and information technology.**

Statement: Explain the role of risk management in reducing risks and improving performance in TDL organizations.

> **Performance Element: Explain the objectives of risk management programs.**

> **Performance Element: Describe the major types of loss exposures for a TDL organization including property, liability, personnel, and net income.**

> **Performance Element: Describe the approaches for managing organizational risks.**

Statement: Explain the roles and functions of government in regulating and supporting TDL organizations within the industry.

Cluster Knowledge and Skill Statement

    Performance Element: Explain roles in regulating domestic transportation operations.

    Performance Element: Explain roles in regulating international transportation operations.

    Performance Element: Explain roles in public transportation infrastructure management.

    Performance Element: Explain the roles in health, safety and environmental management.

Statement: Manage customer relationships (internal and/or external customers).

    Performance Element: Determine customer needs and requirements.

    Performance Element: Determine customer satisfaction and fulfillment of customer requirements.

    Performance Element: Respond to customer problems and complaints.

Statement: Develop and manage plans and budgets to accomplish organizational goals and objectives.

    Performance Element: Develop work plans and budgets that allocate people and resources.

    Performance Element: Develop reports on performance and resource utilization.

    Performance Element: Modify plans and budgets to meet goals and objectives.

Statement: Develop plans to improve organizational performance including customer satisfaction and service/operations performance.

    Performance Element: Identify and describe most critical performance problems.

    Performance Element: Identify opportunities for improvement.

    Performance Element: Use structured problem-solving process to develop improvement plans.

Statement: Maintain compliance with organizational policies and government laws and regulations.

    Performance Element: Identify and explain relevant organizational policies and government laws and regulations for specific functions within TDL organizations.

    Performance Element: Determine compliance with policies and regulations.

    Performance Element: Make recommendations on improving compliance.

Cluster Knowledge and Skill Statement

Safety, Health, and Environmental

Statement: Describe the major regulatory areas (e.g. personal protective equipment) and government laws and regulations.

Performance Element: Describe the major areas addressed in health and safety laws and regulations.

Performance Element: Describe the major areas addressed in environmental management laws and regulations.

Statement: Explain the major components and benefits of health, safety and environmental management systems in TDL organizations.

Performance Element: Describe the major components.

Performance Element: Explain the role and benefits of each component.

Statement: Explain how government agencies promote compliance and improved health, safety and environmental performances in TDL organizations.

Performance Element: Describe the major measures and types of data used by government agencies to measure and monitor health, safety, and environmental risks and performance.

Performance Element: Explain how government can ensure compliance and promote improved performance in TDL organizations.

Statement: Explain how TDL organizations promote improved health, safety, and environmental performance in logistics, distribution, and transportation organizations.

Performance Element: Describe the major measures and types of data used by organizations to measure and monitor health, safety, and environmental risks and performance.

Performance Element: Explain how organizations can improve their performance.

Statement: Demonstrate personal commitment to safety, health and environment policies and procedures.

Performance Element: Maintain knowledge of organizational safety, health, and environmental management policies and procedures.

Performance Element: Follow organizational policies and procedures.

Performance Element: Educate and orient other workers.

Performance Element: Maintain a safe work area.

Performance Element: Identify and describe workplace hazards.

Performance Element: Perform regular audits and inspections to maintain compliance.

Performance Element: Maintain documentation on compliance.

Performance Element: Identify and report health, safety, and environmental problems.

Cluster Knowledge and Skill Statement

      Performance Element: Participate in accident/incident investigations.

Statement: Develop plans to improve health, safety, and environmental performance.

      Performance Element: Identify and describe most critical performance problems.

      Performance Element: Identify opportunities for improvement.

      Performance Element: Use structured problem-solving process to develop improvement plans.

Cluster Knowledge and Skill Statement

Leadership and Teamwork

Statement: Provide group leadership.

    Performance Element: Work with others to develop and gain commitment to team goals.

    Performance Element: Motivate team members to achieve goals.

    Performance Element: Promote the full involvement and utilization of team members.

    Performance Element: Distribute responsibility and work load fairly.

Statement: Collaborate with others.

    Performance Element: Demonstrate commitment to and a positive attitude toward team goals.

    Performance Element: Take responsibility for shared group and individual work tasks.

    Performance Element: Complete your share of the work.

    Performance Element: Assist team members in completing their work.

    Performance Element: Adapt effectively to changes in projects and work activities.

    Performance Element: Negotiate effectively to arrive at decisions.

    Performance Element: Treat people with respect.

    Performance Element: Provide constructive praise and criticism.

    Performance Element: Demonstrate sensitivity to and value for diversity.

    Performance Element: Resolve conflicts.

    Performance Element: Manage stress and control emotions.

Statement: Conduct and participate in meetings.

    Performance Element: Develop meeting objectives, goals and agenda.

    Performance Element: Assign responsibilities for preparing materials and leading discussions.

    Performance Element: Prepare materials for leading discussion.

    Performance Element: Assemble and distribute meeting materials.

    Performance Element: Attend scheduled meetings on time.

    Performance Element: Conduct meeting to achieve objectives within scheduled time.

    Performance Element: Demonstrate effective communication skills in meetings.

    Performance Element: Produce and distribute meeting minutes including decisions and next steps.

Cluster Knowledge and Skill Statement

Ethics and Legal Responsibilities

Statement: Demonstrate awareness of legal responsibilities for different roles and functions within organizations.

Performance Element: Explain legal responsibilities of employees to comply with government laws and regulations.

Performance Element: Explain the major government laws and regulations that define legal responsibilities for different roles and functions including commercial, consumer, health, safety, and environmental, and employment laws and regulations.

Statement: Recognize differences in ethical and legal responsibilities.

Performance Element: Explain differences between ethical and legal responsibilities for different roles and functions.

Performance Element: Explain employer expectations on ethical workplace behavior, personal responsibility and how they are expressed.

Performance Element: Explain workplace differences in personal or professional ethics.

Statement: Apply ethical reasoning to different workplace situations.

Performance Element: Evaluate alternative responses to workplace situations based on legal responsibilities and employer policies.

Performance Element: Evaluate alternative responses to workplace situations based on personal or professional ethical responsibilities.

Performance Element: Identify and explain personal and long term workplace consequences of unethical or illegal behaviors

Performance Element: Determine and explain most appropriate response based on legal and ethical considerations.

Statement: Identify strategies for responding to unethical or illegal actions of individuals and organizations.

Performance Element: Identify and explain alternative strategies for responding to unethical or illegal actions.

Performance Element: Identify and explain best strategy.

Cluster Knowledge and Skill Statement

Employability and Career Development

Statement: Explain written organizational policies, rules and procedures to help employees perform their jobs.

Performance Element: Locate appropriate information on organizational policies in handbooks and manuals.

Measurement Criteria: Identify the contents of various organizational publications.

Measurement Criteria: Select the appropriate document (s) as reference for the situation.

Performance Element: Discuss how specific organizational policies and rules influence a specific work situation.

Measurement Criteria: Locate and identify specific organizational policy, rule or procedure to assist with a given situation.

Measurement Criteria: Explain specific organizational policy, rule or procedure to improve a given situation.

Statement: Identify and demonstrate positive work behaviors and personal qualities.

Performance Element: Demonstrate self-discipline, self-worth, positive attitude, and integrity in a work situation.

Measurement Criteria: Identify the value of maintaining regular attendance.

Measurement Criteria: Identify and follow company dress and appearance standards.

Measurement Criteria: Explain ways to exhibit pride in work.

Performance Element: Demonstrate flexibility and willingness to learn new knowledge and skills.

Measurement Criteria: Exhibit ability to handle stress in a given situation.

Measurement Criteria: Display initiative and open-mindedness in accomplishing a work challenge.

Measurement Criteria: Participate in company orientation and training programs with enthusiasm.

Measurement Criteria: Complete all tasks thoroughly and identify strategies for accomplishing job.

Performance Element: Exhibit commitment to the organization.

Measurement Criteria: Follow established rules, regulations and policies to handle situation.

Measurement Criteria: Compare the role of the employer or manager and the role of the employee in the flow of work.

Measurement Criteria: Describe examples of practicing cost effectiveness.

Measurement Criteria: Demonstrate time management by prioritizing work to meet deadlines.

Statement: Identify and explore career opportunities in one or more career pathways.

Performance Element: Locate and identify career opportunities that appeal to personal career goals.

Measurement Criteria: Locate and interpret career information for at least one career cluster.

Measurement Criteria: Identify job requirements for career pathways.

Measurement Criteria: Identify educational and credentialing requirements for career cluster and pathways.

Cluster Knowledge and Skill Statement

Performance Element: Match personal interests and aptitudes to selected careers.

Measurement Criteria: *Identify personal interests and aptitudes.*

Measurement Criteria: *Identify job requirements and characteristics of selected careers.*

Measurement Criteria: *Compare personal interests and aptitudes with job requirements and characteristics of career selected.*

Measurement Criteria: *Modify career goals based on results of personal interests and aptitudes with career requirements and characteristics.*

Statement: Develop a personal career plan to meet career goals and objectives.

Performance Element: Develop career goal and objectives to plan future career direction.

Measurement Criteria: *Identify career that matches individual interests and aptitudes.*

Measurement Criteria: *Develop realistic career goal with an appropriate time frame.*

Measurement Criteria: *Identify realistic objectives for reaching and advancing in career within the estimated timeline.*

Performance Element: Develop strategies to reach career objectives.

Measurement Criteria: *Develop a list of strategies for achieving educational requirements for selected career.*

Measurement Criteria: *Identify multiple strategies for obtaining employment experiences.*

Measurement Criteria: *Identify alternative career goals and objectives and make adjustments in plan to achieve alternate goal.*

Measurement Criteria: *Develop and maintain a personal educational and career portfolio.*

Statement: Demonstrate ability to seek and apply for employment.

Performance Element: Use multiple resources to locate job opportunities.

Measurement Criteria: *Identify resources for finding employment.*

Measurement Criteria: *Analyze resources to determine those that are most appropriate for desired career.*

Measurement Criteria: *Compare job requirements with personal qualifications, interests, and aptitudes.*

Measurement Criteria: *Select job that matches personal qualifications, interests, and aptitudes.*

Performance Element: Prepare a resume and letter of application to apply.

Measurement Criteria: *Identify respective employer's submission requirements.*

Measurement Criteria: *Gather information and prepare resume in correct format.*

Measurement Criteria: *Write letter of application for specific job opening in correct format without error.*

Performance Element: Complete an employment application to obtain employment.

Measurement Criteria: *Gather information for application.*

Measurement Criteria: *Complete all questions on application with appropriate and honest answers.*

Measurement Criteria: *Sign and date application*

Measurement Criteria: *Attach any supporting material required or requested.*

Cluster Knowledge and Skill Statement

Performance Element: Interview to obtain employment.

    Measurement Criteria: *Dress appropriately for interview.*

    Measurement Criteria: *Exhibit professional conduct before, during and after interview.*

    Measurement Criteria: *Explain your qualifications and interests clearly and concisely.*

    Measurement Criteria: *Answer all questions honestly and concisely.*

    Measurement Criteria: *Write follow-up letter after the interview.*

Statement: Demonstrate ability to evaluate and compare employment opportunities and accept employment.

Performance Element: Evaluate and compare employment opportunity to individual needs and career plan.

    Measurement Criteria: *Identify job advantages and disadvantages.*

    Measurement Criteria: *Compare job benefits to individual needs.*

    Measurement Criteria: *Compare job opportunities and responsibilities to career plan.*

Performance Element: Accept or reject employment.

    Measurement Criteria: *Make decision to accept or reject employment based on facts.*

    Measurement Criteria: *Write acceptance or rejection letter without error.*

    Measurement Criteria: *Complete employment forms upon acceptance without error.*

Cluster Knowledge and Skill Statement

Technical Skills

Statement: Identify and explain the role and function of necessary transportation-related technological systems.

Performance Element: Identify and explain systems for transporting people and freight.

Performance Element: Identify and explain systems for transportation support operations.

Performance Element: Identify and explain information technology applications.

Statement: Explain the importance of measuring and managing the reliability and performance of technological systems.

Performance Element: Define and explain the concept of reliability.

Performance Element: Explain how reliability and overall system performance is measured and monitored.

Performance Element: Describe the importance of the reliability and performance of technological systems in improving the performance of TDL organizations.

Performance Element: Describe the results of poor reliability and performance of technological systems in improving the performance of TDL organizations.

Performance Element: Explain how employees can contribute to improved reliability and performance (e.g., design, selection, maintenance, operation/utilization).

Statement: Explain major health, safety and environmental risks and potential impacts of technological systems.

Performance Element: Explain the major health, safety and environmental risks and potential impacts of technological systems.

Performance Element: Explain how these risks and impacts can be managed in TDL organizations.

Statement: Participate in the evaluation and selection of technological systems.

Performance Element: Identify and explain the organizational requirements and selection criteria for technological systems.

Performance Element: Use the requirements and selection criteria to evaluate alternatives.

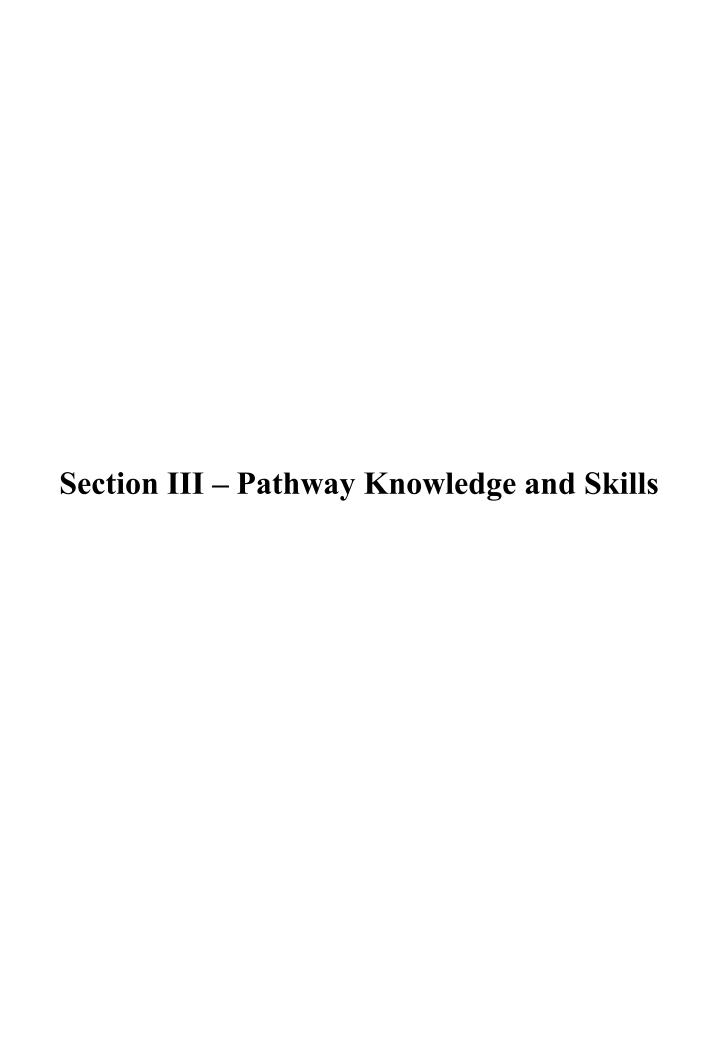**Performance Element: Recommend the best technological systems.**

Statement: Participate in efforts to improve the utilization and performance of technological systems.

Performance Element: Identify and prioritize reliability and performance problems.

Performance Element: Identify opportunities for improvement.

Performance Element: Use structured problem-solving process to develop improvement plans.

Section III – Pathway Knowledge and Skills

PATHWAY: Transportation Operations

Pathway Topic: Transportation Operations

Pathway KS Statement: Develop and manage transportation plans to move people and/or goods to meet customer requirements.

Performance Element: Develop transportation plans including routes and schedules for transporting people and goods.

> ***Measurement Criteria:*** *Determine origin and destination points for routing.*
>
> ***Measurement Criteria:*** *Determine load levels and transportation requirements for goods and/or people.*
>
> ***Measurement Criteria:*** *Determine availability of qualified operators and required transportation equipment.*
>
> ***Measurement Criteria:*** *Develop routes to meet service and time requirements at lowest cost.*
>
> ***Measurement Criteria:*** *Develop plans and schedules (including times, operators, equipment, and related resources) that meet service/time requirements at lowest costs.*
>
> ***Measurement Criteria:*** *Develop transportation plans (e.g., report, memo, tables) including routing and scheduling.*
>
> ***Measurement Criteria:*** *Present transportation plans (e.g. business meeting).*

Performance Element: Monitor and adjust transportation plans to meet customer requirements.

> ***Measurement Criteria:*** *Review current plans, routes, and schedules.*
>
> ***Measurement Criteria:*** *Analyze information on the movement of people/goods according to plans and schedules.*
>
> ***Measurement Criteria:*** *Determine need to adjust/review plans, routes, and schedules in response to changing conditions and customer requirements.*
>
> ***Measurement Criteria:*** *Revise transportation plans (e.g., report, memo, tables/charts) including routing and scheduling.*
>
> ***Measurement Criteria:*** *Present revised plans (e.g. business meetings).*

Performance Element: Manage traffic flow at transportation hubs, facilities, and staging areas.

> ***Measurement Criteria:*** *Develop/review plans and schedules for arrival, loading/staging, and departure at transportation facility.*
>
> ***Measurement Criteria:*** *Analyze current status of scheduled arrivals and departures relative to plans.*
>
> ***Measurement Criteria:*** *Determine need to adjust/review staging/loading arrangements at the facility.*
>
> ***Measurement Criteria:*** *Revise traffic flow and staging plans and schedules (e.g., report, memo, charts/tables).*
>
> ***Measurement Criteria:*** *Present revised plans (e.g. team meeting).*

Performance Element: Negotiate contracts for transportation operations services.

> ***Measurement Criteria:*** *Determine transportation services to be bid and contracted.*
>
> ***Measurement Criteria:*** *Develop proposal and review/selection criteria.*
>
> ***Measurement Criteria:*** *Identify possible service providers.*
>
> ***Measurement Criteria:*** *Develop bid specifications for providers.*

Pathway Topic: Transportation Operations

Measurement Criteria: *Request bids from providers.*

Measurement Criteria: *Evaluate bids and select provider(s).*

Measurement Criteria: *Document (e.g., report, memo, tables) evaluation process and selection decision.*

Measurement Criteria: *Present and explain information on process and decisions (e.g., business meetings).*

Pathway KS Statement: Improve the performance of transportation operations to meet customer and business requirements.

Performance Element: Monitor and report on the performance of transportation operations.

Measurement Criteria: *Develop performance measures and determine data requirements for monitoring performance.*

Measurement Criteria: *Collect and organize performance data in data base.*

Measurement Criteria: *Establish performance targets/standards for monitoring performance.*

Measurement Criteria: *Analyze performance relative to targets/standards and identify performance problems.*

Measurement Criteria: *Document and report system performance trends and problems using graphs/charts (e.g. reports, memos).*

Measurement Criteria: *Present and explain information on performance (e.g., business meetings).*

Performance Element: Develop strategies to improve service levels and quality and reduce costs.

Measurement Criteria: *Determine performance gaps and improvement opportunities (e.g., on-time delivery, yields, capacity utilization, costs).*

Measurement Criteria: *Identify and evaluate causes of performance gaps.*

Measurement Criteria: *Identify and evaluate potential solutions (e.g. routing, scheduling, equipment upgrades, operator training).*

Measurement Criteria: *Determine most appropriate solutions.*

Measurement Criteria: *Document causes and recommended solutions in written reports.*

Measurement Criteria: *Present and explain proposed solutions (e.g., business meetings).*

Pathway KS Statement: Maintain and improve compliance with company policies and government laws and regulations.

Performance Element: Monitor and evaluate compliance with company policies and government laws and regulations.

Measurement Criteria: *Develop compliance checklist for conducting review.*

Measurement Criteria: *Develop compliance review process.*

Measurement Criteria: *Conduct compliance review.*

Measurement Criteria: *Document compliance findings and make recommendations (e.g., report, memo).*

Measurement Criteria: *Present and explain compliance findings and recommendations (e.g., business meetings).*

Pathway Topic: Transportation Operations

Performance Element: Revise company policies, procedures, and information/documentation systems to improve compliance with changing customer/business requirements (e.g., quality systems) and government laws and regulations (e.g., health, safety, environment).

Measurement Criteria: *Review current compliance problems (e.g., compliance review findings).*

Measurement Criteria: *Identify changing customer/business requirements and government laws and regulations.*

Measurement Criteria: *Determine need for revising company policies, procedures and systems.*

Measurement Criteria: *Develop report with recommended revisions.*

Measurement Criteria: *Present and explain recommended revisions (e.g., business meetings).*

PATHWAY: Logistics Planning and Management Services

Pathway Topic: Logistics Planning and Management

Pathway KS Statement: *Develop logistics solutions for customers.*

Performance Element: Determine customer needs and requirements.

Measurement Criteria: *Identify services that meet customer requirements.*

Measurement Criteria: *Determine service requirements.*

Measurement Criteria: *Estimate/forecast the demand for services.*

Measurement Criteria: *Document (e.g., report, memo, tables) customer requirements and service demand.*

Measurement Criteria: *Present and explain information on customer requirements and service demand (e.g., business meetings).*

Performance Element: Select mode/modes of transportation.

Measurement Criteria: *Identify all possible modes.*

Measurement Criteria: *Develop criteria for selecting mode(s).*

Measurement Criteria: *Select most cost-effective mode(s) based on evaluation criteria.*

Measurement Criteria: *Document (e.g., report, memo, tables) evaluation process and selection decision.*

Measurement Criteria: *Present and explain information on process and decisions (e.g., business meetings).*

Performance Element: Select carriers for transportation mode/modes.

Measurement Criteria: *Determine selection criteria for carriers.*

Measurement Criteria: *Identify possible carriers for selected mode(s).*

Measurement Criteria: *Develop bid specifications for carriers.*

Measurement Criteria: *Request bids from carriers.*

Measurement Criteria: *Evaluate bids and select carrier(s).*

Measurement Criteria: *Document (e.g., report, memo, tables) evaluation process and selection decision.*

Measurement Criteria: *Present and explain information on selection process and decisions (e.g., business meetings).*

Performance Element: Determine the locations of facilities and services within logistics networks.

Measurement Criteria: *Develop criteria for location decisions.*

Measurement Criteria: *Identify the general region(s) for locations.*

Measurement Criteria: *Identify and map potential locations.*

Measurement Criteria: *Evaluate alternative locations and determine service level and cost differences.*

Measurement Criteria: *Select locations.*

Measurement Criteria: *Document (e.g., report, memo, tables) evaluation process and location decisions.*

Measurement Criteria: *Present and explain information on location process and decisions (e.g., business meetings).*

Performance Element: Develop transportation plans including routes and schedules for transporting people and goods.

Measurement Criteria: *Determine origin and destination points for routing.*

Pathway Topic: Logistics Planning and Management

Measurement Criteria: *Determine load levels and transportation requirements for goods and/or people.*

Measurement Criteria: *Determine availability of qualified operators and required transportation equipment.*

Measurement Criteria: *Develop routes to meet service and time requirements at lowest cost.*

Measurement Criteria: *Develop plans and schedules (including times, operators, equipment, and related resources) that meet service/time requirements at lowest costs.*

Measurement Criteria: *Develop transportation plan (e.g., report, memo, tables) including routing and scheduling.*

Measurement Criteria: *Present transportation plan (e.g. business meeting).*

Performance Element: Develop warehousing/storage solutions.

Measurement Criteria: *Determine selection criteria for warehousing services (e.g., loading, storing, consolidating).*

Measurement Criteria: *Identify possible warehousing providers.*

Measurement Criteria: *Develop bid specifications for providers.*

Measurement Criteria: *Request bids from providers.*

Measurement Criteria: *Evaluate bids and select provider(s).*

Measurement Criteria: *Document (e.g., report, memo, tables) warehousing solution.*

Measurement Criteria: *Present and explain information on warehousing solutions (e.g., business meetings).*

Performance Element: Develop packaging and material handling solutions.

Measurement Criteria: *Determine packaging, transporting, storage, and handling requirements.*

Measurement Criteria: *Identify alternative solutions.*

Measurement Criteria: *Evaluate alternative solutions.*

Measurement Criteria: *Select most cost-effective solution.*

Measurement Criteria: *Document (e.g., report, memo, tables) evaluation process and selection decision.*

Measurement Criteria: *Present and explain information on packaging and material handling solutions (e.g., business meetings).*

Performance Element: Develop documentation and information flow requirements and solutions.

Measurement Criteria: *Determine required documentation to meet regulatory/legal requirements.*

Measurement Criteria: *Determine additional customer documentation and information flow requirements.*

Measurement Criteria: *Develop document package and proposed process for providing information to designated parties to meet legal and customer requirements.*

Measurement Criteria: *Document (e.g., report, memo, tables) documentation and information flow requirements and how documentation package and plan meets these requirements.*

Measurement Criteria: *Present and explain documentation and information flow*

Pathway Topic: Logistics Planning and Management

solutions (e.g., business meetings).

Performance Element: Determine documentation and other requirements for international transportation and logistics.

Measurement Criteria: *Determine required documentation to meet regulatory/legal requirements for international transportation.*

Measurement Criteria: *Determine additional customer documentation and information flow requirements.*

Measurement Criteria: *Develop document package and proposed process for providing information to designated parties to meet legal and customer requirements.*

Measurement Criteria: *Document (e.g., report, memo, tables) international requirements.*

Measurement Criteria: *Present and explain information on international requirements (e.g., business meetings).*

Performance Element: Negotiate contracts for logistics planning and management services.

Measurement Criteria: *Determine logistics and planning services to be bid and contracted.*

Measurement Criteria: *Develop proposal and review/selection criteria.*

Measurement Criteria: *Identify possible service providers.*

Measurement Criteria: *Develop bid specifications for providers.*

Measurement Criteria: *Request bids from providers.*

Measurement Criteria: *Evaluate bids and select provider(s).*

Measurement Criteria: *Document (e.g., report, memo, tables) evaluation process and selection decision.*

Measurement Criteria: *Present and explain information on process and decisions (e.g., business meetings).*

Pathway KS Statement: Analyze and improve performance of logistics systems.

Performance Element: Monitor and report on the performance of logistics systems.

Measurement Criteria: *Develop performance measures and determine data requirements for monitoring performance.*

Measurement Criteria: *Collect and organize performance data in data base.*

Measurement Criteria: *Establish performance targets/standards for monitoring performance.*

Measurement Criteria: *Analyze performance relative to targets/standards and identify performance problems.*

Measurement Criteria: *Document and report system performance trends and problems using graphs/charts (e.g. reports, memos).*

Measurement Criteria: *Present and explain information on system performance (e.g., business meetings).*

Performance Element: Develop/revise short-term and long-term demand forecasts.

Measurement Criteria: *Determine most appropriate forecasting method.*

Measurement Criteria: *Identify factors/variables for developing forecasting models.*

Pathway Topic: Logistics Planning and Management

Measurement Criteria: *Determine data requirements.*

Measurement Criteria: *Gather and organize data into database.*

Measurement Criteria: *Develop and evaluate forecasts.*

Measurement Criteria: *Document forecasts using graphs and charts in written reports.*

Measurement Criteria: *Present and explain information on forecasting process and results (e.g., business meetings).*

Performance Element: Evaluate risk factors and social and economic trends affecting logistics systems.

Measurement Criteria: *Evaluate the potential risks associated with national or global political and government policy changes.*

Measurement Criteria: *Evaluate the potential risks of national or global social and cultural changes.*

Measurement Criteria: *Evaluate the potential risks of national or global technological changes.*

Measurement Criteria: *Evaluate the potential risks of national or global economic changes.*

Measurement Criteria: *Document evaluation of risk factors and implications for revising logistics solutions in written reports.*

Measurement Criteria: *Present and explain information on risks and implications (e.g., business meetings).*

Performance Element: Develop strategies to improve service levels and quality and reduce costs.

Measurement Criteria: *Determine performance gaps and improvement priorities.*

Measurement Criteria: *Identify and evaluate causes of performance gaps.*

Measurement Criteria: *Identify and evaluate potential solutions.*

Measurement Criteria: *Determine most appropriate solutions.*

Measurement Criteria: *Document causes and recommended solutions in written reports.*

Measurement Criteria: *Present and explain information on improvement solutions (e.g., business meetings).*

Performance Element: Evaluate compliance with documentation and other requirements for international transportation and logistics.

Measurement Criteria: *Develop compliance checklist for international requirements.*

Measurement Criteria: *Develop compliance review process for evaluating compliance.*

Measurement Criteria: *Conduct compliance review.*

Measurement Criteria: *Document compliance findings and make recommendations in writing (e.g., report, memo).*

Measurement Criteria: *Present and explain information on compliance (e.g., business meetings).*

Performance Element: Evaluate performance and contract compliance of contractors and service providers.

Measurement Criteria: *Identify performance and contract compliance requirements in contracts/agreements.*

Measurement Criteria: *Collect and organize contractor performance data into*

Pathway Topic: Logistics Planning and Management

                                       database.

Measurement Criteria: *Analyze performance data.*

Measurement Criteria: *Develop compliance checklist and review procedure for other contract requirements.*

Measurement Criteria: *Conduct compliance review.*

Measurement Criteria: *Document findings in written reports/memos.*

Measurement Criteria: *Present and explain information on contractor performance (e.g., business meetings).*

PATHWAY: Warehousing and Distribution Center Operations

Pathway Topic: Warehousing and Distribution Center Operations

Pathway KS Statement: Prepare, process, and store incoming and outgoing goods and materials.

Performance Element: Develop packaging, storage, and handling solutions for goods and materials.

Measurement Criteria: *Determine potential risks or damage from normal rigors including compression, shock, drop, moisture, corrosion, vibration, temperature, and motion during transportation and handling.*

Measurement Criteria: *Determine potential hazards to other goods and materials and health, safety and environmental risks.*

Measurement Criteria: *Determine size, weight, and shape requirements for packaging solutions.*

Measurement Criteria: *Determine best handling and storage methods and additional packaging requirements for these methods.*

Measurement Criteria: *Determine customer visual design and appearance requirements including handling information, warnings, display requirements, and required documentation.*

Measurement Criteria: *Determine other customer functional requirements including display/presentation and assembly and use requirements.*

Measurement Criteria: *Develop and test alternative packaging solutions and document test results.*

Measurement Criteria: *Document and develop prototypes of proposed packaging solution meeting requirements.*

Measurement Criteria: *Present and explain solution to customers (e.g., business meetings).*

Measurement Criteria: *Identify and map potential locations.*

Measurement Criteria: *Evaluate alternative locations and determine service level and cost differences.*

Measurement Criteria: *Select locations.*

Measurement Criteria: *Document (e.g., report, memo, tables) evaluation process and location decisions.*

Measurement Criteria: *Present and explain information on location process and decisions (e.g., business meetings).*

Performance Element: Develop warehousing solutions to meet customer and business requirements.

Measurement Criteria: *Determine customer requirements for warehousing services including processing, handling, and storing goods and materials including additional logistics and information services (e.g., reviewing customer compliance manuals).*

Measurement Criteria: *Project short-term and long-term demand for warehousing services including the volume and flow of goods and materials to and from warehouse(s).*

Measurement Criteria: *Determine and map warehouse location(s).*

Measurement Criteria: *Determine size and configuration of warehouse structure and*

Pathway Topic: Warehousing and Distribution Center Operations

infrastructure requirements and develop external layout plan (e.g. access roads, lots, dock configuration).

Measurement Criteria: *Develop internal layout plan including areas for processing incoming and outgoing products, cross-docking, and storage.*

Measurement Criteria: *Select material handling and storage equipment.*

Measurement Criteria: *Develop policies and procedures for processing goods and materials that meet customer requirements and comply in government regulations.*

Measurement Criteria: *Determine documentation and information requirements for managing warehouse operations.*

Measurement Criteria: *Develop report on proposed warehousing solution.*

Measurement Criteria: *Present and explain information on warehousing solution (e.g., business meetings).*

Performance Element: Process incoming products including unloading, receiving, checking, marking/identification and transporting to storage pick-up areas, work stations, or outbound staging areas and storing products for order-picking.

Measurement Criteria: *Determine scheduled volume and flow of incoming products for day/week.*

Measurement Criteria: *Determine equipment and staffing requirements and develop traffic management and work schedules.*

Measurement Criteria: *Select space for storing or cross-docking of incoming products.*

Measurement Criteria: *Develop instructions and related documentation (e.g., labels) for internal processing/storage.*

Measurement Criteria: *Confirm documentation (e.g., bill of lading, packing lists, MSDS sheets) and seals on incoming products and accept shipments.*

Measurement Criteria: *Unload and confirm quantity and contents of shipments and inspect for damage/hazards.*

Measurement Criteria: *Move to storage and cross-docking areas.*

Measurement Criteria: *Complete documentation on incoming processing and condition of products.*

Measurement Criteria: *Complete daily/weekly reports for customers and business on processing activities and inventory.*

Measurement Criteria: *Present and explain reports at business meetings.*

Performance Element: Process outbound shipments including order-picking, sorting and checking; packaging, sealing, weighing, and manifesting; and loading and load balancing and shipping.

Measurement Criteria: *Determine scheduled volume and flow of outbound products for day/week.*

Measurement Criteria: *Determine equipment and staffing requirements and develop traffic management and work schedules.*

Measurement Criteria: *Develop instructions for picking, moving, unitizing, and packaging outbound shipment.*

Measurement Criteria: *Develop and package shipping documentation (e.g., bill of lading, packing lists, international documentation, placards,*

Pathway Topic: Warehousing and Distribution Center Operations

MSDS sheets).

Measurement Criteria: *Pick, assemble and package orders and load and secure them within containers and transport equipment (e.g. truck trailers, rail cars).*

Measurement Criteria: *Transfer and process documentation with transporter.*

Measurement Criteria: *Complete documentation on outbound processing.*

Measurement Criteria: *Complete daily/weekly reports for customers and business on processing activities and inventory.*

Measurement Criteria: *Present and explain reports at business meetings.*

Performance Element: Manage inventory according to company policies and customer requirements.

Measurement Criteria: *Forecast demand for products and materials for shipping.*

Measurement Criteria: *Determine required inventory levels to meet projected demand and maintain customer defined service levels (i.e., safety stock levels).*

Measurement Criteria: *Project incoming shipment level and schedules to maintain inventory levels.*

Measurement Criteria: *Conduct inventory control audits and develop inventory control reports.*

Measurement Criteria: *Develop reports on inventory management and control.*

Measurement Criteria: *Present and explain information on location process and decisions (e.g., business meetings).*

Pathway KS Statement: Improve the performance of warehousing and distribution operations to meet customer and business requirements.

Performance Element: Improve warehousing operations systems, processes and procedures.

Measurement Criteria: *Compile warehouse performance data.*

Measurement Criteria: *Analyze performance relative to targets/standards and identify performance problems.*

Measurement Criteria: *Document and report system performance trends and problems using graphs/charts (e.g. reports, memos).*

Measurement Criteria: *Identify potential solutions.*

Measurement Criteria: *Evaluate and select best solutions.*

Measurement Criteria: *Present and explain information on system performance and proposed solutions (e.g., business meetings).*

Performance Element: Improve the performance and reliability of warehousing equipment and information systems.

Measurement Criteria: *Compile warehouse equipment/system performance and reliability data.*

Measurement Criteria: *Analyze performance relative to targets/standards and identify performance problems.*

Measurement Criteria: *Document and report system performance trends and problems using graphs/charts (e.g. reports, memos).*

Measurement Criteria: *Identify potential solutions.*

Pathway Topic: Warehousing and Distribution Center Operations

Measurement Criteria: *Evaluate and select best solutions.*

Measurement Criteria: *Present and explain information on performance/reliability and proposed solutions (e.g., business meetings).*

Pathway KS Statement: Maintain the compliance of transportation operations with company policies and government laws and regulations.

Performance Element: Maintain compliance with and performance of health, safety and environmental management system requirements.

Measurement Criteria: *Analyze changes in government laws and regulations and new customer requirements and determine required system changes.*

Measurement Criteria: *Conduct health, safety and environmental reviews/audits to determine level of conformity.*

Measurement Criteria: *Compile and analyze health, safety, and environmental incidence data and audit findings.*

Measurement Criteria: *Determine causes of system failures.*

Measurement Criteria: *Identify and evaluate alternative solutions.*

Measurement Criteria: *Develop report on system performance and proposed solutions.*

Measurement Criteria: *Present and explain report in business meetings.*

Performance Element: Maintain compliance with and performance of security and loss prevention systems.

Measurement Criteria: *Analyze changes in government laws and regulations (e.g., control of hazardous materials) and new customer requirements and determine required system changes.*

Measurement Criteria: *Conduct inventory control, security/loss prevention reviews and audits to determine level of conformity.*

Measurement Criteria: *Compile and analyze damage and loss data and audit findings.*

Measurement Criteria: *Determine causes of system failures.*

Measurement Criteria: *Identify and evaluate alternative solutions.*

Measurement Criteria: *Develop report on system performance and proposed solutions.*

Measurement Criteria: *Present and explain report in business meetings.*

Performance Element: Maintain compliance with and performance of quality management systems.

Measurement Criteria: *Analyze changes in government laws and regulations (e.g., government procurement) and new customer requirements (e.g., ISO 9000) and determine required system changes.*

Measurement Criteria: *Conduct quality reviews and audits to determine level of conformity.*

Measurement Criteria: *Compile and analyze quality failure cost data and audit findings.*

Measurement Criteria: *Determine causes of system failures.*

Measurement Criteria: *Identify and evaluate alternative solutions.*

Measurement Criteria: *Develop report on system performance and proposed solutions.*

Measurement Criteria: *Present and explain report in business meetings.*

PATHWAY: Facility and Mobile Equipment Maintenance

Pathway Topic: Facility and Mobile Equipment Maintenance

Pathway KS Statement: Develop and manage preventive maintenance plans and systems.

Performance Element: Develop preventive maintenance plans and systems to meet business and equipment manufacturer requirements.

Measurement Criteria: Identify performance/reliability requirements for the use of facilities and equipment.

Measurement Criteria: Review and analyze facilities and equipment documentation to determine preventive maintenance requirements.

Measurement Criteria: Review safety and environmental regulations and policies to determine adequacy and compliance.

Measurement Criteria: Review performance/reliability and maintenance records to determine the efficacy of current systems and methods.

Measurement Criteria: Develop routine maintenance procedures and schedules to satisfy the performance/reliability requirements.

Measurement Criteria: Develop emergency maintenance procedures to satisfy the performance requirements.

Measurement Criteria: Determine equipment/material/supply and labor requirements for the procedures and schedules developed to satisfy performance/reliability requirements.

Measurement Criteria: Develop purchasing plans and inventory levels for supplies/parts needed to satisfy the developed procedures and schedules.

Measurement Criteria: Determine people and resources to satisfy the schedule and reliability requirements.

Measurement Criteria: Develop written preventative maintenance plans that satisfy the reliability requirements.

Measurement Criteria: Present and explain plans (e.g., business meetings).

Performance Element: Monitor and evaluate the performance of maintenance plans and systems.

Measurement Criteria: Monitor and maintain information on facilities and equipment use and reliability.

Measurement Criteria: Monitor and maintain information on the implementation and operation of preventive maintenance systems, including compliance with safety and environmental requirements (e.g., records, logs).

Measurement Criteria: Monitor and maintain information on the availability of parts/materials/supplies and the management of inventory levels.

Measurement Criteria: Evaluate maintenance plan and system performance and identify problems.

Measurement Criteria: Develop reports on system implementation and performance.

Measurement Criteria: Present and explain report (e.g., business meetings).

Pathway KS Statement: Maintain and improve facilities, equipment, and system performance.

Pathway Topic: Facility and Mobile Equipment Maintenance

Performance Element: Develop and manage repair plans.

Measurement Criteria: *Identify and describe facility and mobile equipment reliability/performance problems.*

Measurement Criteria: *Determine causes of reliability/performance problems of facilities, equipment, subsystems, and/or components including electrical/electronic, fluid power, and mechanical systems and computer control systems.*

Measurement Criteria: *Determine repair procedures and equipment, materials, parts, supplies, and labor requirements to accomplish repairs.*

Measurement Criteria: *Develop written plans (e.g., repair plan forms).*

Measurement Criteria: *Present and explain report (e.g., business meetings).*

Performance Element: Develop plans for improving facilities/equipment/system performance.

Measurement Criteria: *Review maintenance reports on performance of current facilities, equipment, and the maintenance and reliability system.*

Measurement Criteria: *Analyze and evaluate professional literature on new products/technology/methods with higher levels of reliability and performance.*

Measurement Criteria: *Identify potential areas for improvement.*

Measurement Criteria: *Analyze costs and benefits of alternative strategies (e.g., buy new equipment, upgrade equipment, change maintenance system) for improving performance.*

Measurement Criteria: *Develop written improvement plan with recommendations.*

Measurement Criteria: *Present and explain plan. (e.g. business meetings).*

PATHWAY: Transportation Systems/Infrastructure Planning, Management and Regulations

Pathway Topic: Transportation Systems/Infrastructure Planning, Management and Regulations

Pathway KS Statement: Plan and maintain public transportation infrastructure.

Performance Element: Develop plans for new, improved or discontinued public transportation infrastructure (e.g., highways, airports, train terminals, ports, intermodal facilities).

Measurement Criteria: *Analyze changing customer/market needs and requirements.*

Measurement Criteria: *Explain local, state and federal political influences and impact on requirements.*

Measurement Criteria: *Determine the key features and capabilities of public infrastructure to meet these requirements.*

Measurement Criteria: *Develop projections of the demand for and utilization of infrastructure.*

Measurement Criteria: *Evaluate the costs and benefits of public transportation infrastructure including environmental, economic, and social impacts.*

Measurement Criteria: *Develop plans for transportation infrastructure including reports and land and infrastructure maps and drawings and related design documents.*

Measurement Criteria: *Present and explain plans (e.g., public meeting).*

Performance Element: Develop plans to maintain transportation infrastructure.

Measurement Criteria: *Review and analyze maintenance requirements of infrastructure.*

Measurement Criteria: *Monitor and analyze the usage and conditions of transportation infrastructure.*

Measurement Criteria: *Develop maintenance plans including schedules, material and labor requirements and budgets.*

Measurement Criteria: *Present and explain plans (e.g., business meeting).*

Pathway KS Statement: Plan and manage public transportation services.

Performance Element: Develop plans for new, improved or discontinued transportation services including public transportation services.

Measurement Criteria: *Analyze changing customer/market needs and requirements.*

Measurement Criteria: *Determine the key features and capabilities of services to meet requirements.*

Measurement Criteria: *Develop projections of the demand for and utilization of services.*

Measurement Criteria: *Evaluate the costs and benefits of public transportation services (including economic, social, environmental).*

Measurement Criteria: *Develop plans for public transportation services including projected routes and schedules and related infrastructure and equipment requirements.*

Measurement Criteria: *Present and explain plans (e.g., public meeting).*

Pathway Topic: Transportation Systems/Infrastructure Planning, Management and Regulations

Performance Element: Monitor and report on the performance of public transportation operations.

Measurement Criteria: *Develop performance measures and determine data requirements for monitoring performance.*

Measurement Criteria: *Collect and organize performance data in database.*

Measurement Criteria: *Establish performance targets/standards for monitoring performance.*

Measurement Criteria: *Analyze performance relative to targets/standards and identify performance problems.*

Measurement Criteria: *Document and report system performance trends and problems using graphs/charts (e.g. reports, memos).*

Measurement Criteria: *Present and explain information on performance (e.g., business meetings).*

Performance Element: Develop strategies to improve service levels and quality and reduce costs.

Measurement Criteria: *Determine performance gaps and improvement opportunities (e.g., on schedule, ridership, capacity utilization, costs).*

Measurement Criteria: *Identify and evaluate causes of performance gaps.*

Measurement Criteria: *Identify and evaluate potential solutions (e.g. routing, scheduling, equipment upgrades, operator training).*

Measurement Criteria: *Determine most appropriate solutions.*

Measurement Criteria: *Document causes and recommended solutions in written reports.*

Measurement Criteria: *Present and explain proposed solutions (e.g., business meetings).*

Pathway KS Statement: Transportation system management.

Performance Element: Develop plans to improve system utilization and traffic flow.

Measurement Criteria: *Collect and analyze system utilization and traffic flow data.*

Measurement Criteria: *Determine major problem areas (e.g., delays, travel times, congestion).*

Measurement Criteria: *Identify and evaluate alternative solutions.*

Measurement Criteria: *Develop plans to improve system performance.*

Measurement Criteria: *Present and explain plans (e.g., public meetings).*

Performance Element: Develop plans to improve safety and environmental performance of carriers and safety conditions in transportation systems.

Measurement Criteria: *Analyze the safety and environmental performance of carriers and safety conditions in transportation systems.*

Measurement Criteria: *Determine major problem areas (e.g., hazardous materials, accident rates).*

Measurement Criteria: *Identify and evaluate alternative solutions.*

Measurement Criteria: *Develop plans to improve safety and environmental performance.*

Measurement Criteria: *Present and explain plans (e.g., public meetings).*

PATHWAY: Health, Safety and Environmental Management

Pathway Topic: Health, Safety and Environmental Management

Pathway KS Statement: Develop and maintain safety, health and environmental management systems.

Performance Element: Develop/revise safety, health, and environmental management systems including policies, procedures and documentation.

Measurement Criteria: *Compile and review current systems including policies, procedures and documentation.*

Measurement Criteria: *Review current compliance problems (e.g., audit/inspection findings, documentation systems).*

Measurement Criteria: *Review health/safety and environmental hazard analyses and incidence reports.*

Measurement Criteria: *Identify changing government laws and regulations.*

Measurement Criteria: *Determine need for revising company policies, procedures and systems.*

Measurement Criteria: *Develop report with recommended revisions.*

Measurement Criteria: *Present and explain recommended revisions (e.g., business meetings).*

Performance Element: Conduct audits and inspections and evaluate compliance with company policies and government laws and regulations.

Measurement Criteria: *Develop compliance checklist for conducting audits and inspections.*

Measurement Criteria: *Develop audit/inspection process/procedures and schedule.*

Measurement Criteria: *Conduct audits and inspections.*

Measurement Criteria: *Document audit/inspection findings and make recommendations (e.g., report, memo).*

Measurement Criteria: *Present and explain findings and recommendations (e.g., business meetings).*

Performance Element: Communicate, promote, and support the full implementation of health, safety and environmental policies, procedures, and documentation systems.

Measurement Criteria: *Prepare information and materials to promote awareness and advocate safe and healthy work environment.*

Measurement Criteria: *Develop workplace materials and documentation tools to support system implementation and management.*

Measurement Criteria: *Prepare training materials for providing new employee orientation and recurrent training and support (including required employee training.)*

Measurement Criteria: *Conduct employee training.*

Measurement Criteria: *Evaluate the effectiveness of promotional and support materials and employee training.*

Measurement Criteria: *Document communication, support, and training activities and recommend improvements.*

Measurement Criteria: *Present and explain report and recommendations (e.g., business meeting).*

Performance Element: Prepare for health, safety, and environmental emergencies.

Pathway Topic: Health, Safety and Environmental Management

Measurement Criteria: *Review current policies and procedures for emergency response.*

Measurement Criteria: *Review reports/documentation on emergency responses and emergency response drills.*

Measurement Criteria: *Review government laws and regulations.*

Measurement Criteria: *Revise/update current policies and procedures for emergency response.*

Measurement Criteria: *Develop communication, training, and support materials.*

Measurement Criteria: *Conduct training and emergency response drills.*

Measurement Criteria: *Develop report on updated policies, procedures, documentation, training, and drills and recommend next steps.*

Measurement Criteria: *Present and explain report and recommendations (e.g., business meeting).*

Pathway KS Statement: Improve Safety, Health, and Environmental System performance.

Performance Element: Conduct health, safety and environmental incident investigations and recommend corrective action.

Measurement Criteria: *Develop comprehensive description/documentation of incident(s) and notify relevant authorities.*

Measurement Criteria: *Conduct root cause analysis and identify causes of incident.*

Measurement Criteria: *Identify and evaluate potential solutions.*

Measurement Criteria: *Develop recommendations for corrective action.*

Measurement Criteria: *Develop report on incident findings and recommended corrective actions.*

Measurement Criteria: *Present and explain report and recommendations (e.g., business meeting).*

Performance Element: Conduct safety, health, and environmental analyses to evaluate and manage risks of equipment and material utilization and work processes and recommend corrective actions.

Measurement Criteria: *Develop comprehensive description/documentation of hazards in the workplace.*

Measurement Criteria: *Conduct hazard analysis and review of potential hazard reduction/elimination strategies.*

Measurement Criteria: *Develop recommendations for hazard reduction or elimination.*

Measurement Criteria: *Develop report on hazard analysis findings and recommended corrective actions.*

Measurement Criteria: *Present and explain report and recommendations (e.g., business meeting).*

Performance Element: Develop strategies to improve safety, health, and environmental system performance.

Measurement Criteria: *Compile and analyze data on safety, health, and environmental performance.*

Measurement Criteria: *Identify most critical improvement opportunities.*

Measurement Criteria: *Identify and evaluate alternative improvement strategies/solutions.*

Pathway Topic: Health, Safety and Environmental Management

  Measurement Criteria: *Recommend improvement strategies.*

  Measurement Criteria: *Develop report on performance and improvement strategies.*

  Measurement Criteria: *Present and explain report and recommendations (e.g.,
  business meetings).*

PATHWAY: Sales and Service

Pathway Topic: Sales and Service

Pathway KS Statement: *Manage sales and service operations.*

Performance Element: Determine sales growth opportunities for new products and services.

Measurement Criteria: *Analyze changing customer/market needs.*

Measurement Criteria: *Evaluate impacts of social, economic, and technological changes on future customer needs.*

Measurement Criteria: *Identify potential product/service features and mixes and pricing strategies to meet future needs.*

Measurement Criteria: *Evaluate competitor products/services and pricing strategies.*

Measurement Criteria: *Determine future demand for potential products and services.*

Measurement Criteria: *Identify most promising products and services.*

Measurement Criteria: *Develop report on recommended new products and services.*

Measurement Criteria: *Present and explain report (e.g. business meetings).*

Performance Element: Develop plans to meet sales goals with existing products and services .

Measurement Criteria: *Compile and analyze historical sales performance (e.g., spreadsheets, graphs).*

Measurement Criteria: *Develop sales goals and forecasts for sales period that meet business requirements.*

Measurement Criteria: *Develop promotion, pricing, sales strategies to meet sales goals.*

Measurement Criteria: *Develop sales plan report.*

Measurement Criteria: *Present and explain report (e.g. business meeting).*

Pathway KS Statement: *Sell transportation services.*

Performance Element: Sell logistics and transportation products and services.

Measurement Criteria: *Establish customer relationship.*

Measurement Criteria: *Determine customer needs.*

Measurement Criteria: *Describe and explain alternative products and services and pricing (e.g., logistics services, transportation equipment, travel/routing arrangements).*

Measurement Criteria: *Assist customer in making decisions.*

Measurement Criteria: *Close customer sale.*

Measurement Criteria: *Complete sales transaction.*

Measurement Criteria: *Prepare sales documents (e.g., contracts, sales documents, travel arrangements/tickets).*

Measurement Criteria: *Present and explain sales documents to customer.*

Performance Element: Provide ongoing customer service.

Measurement Criteria: *Greet customer.*

Measurement Criteria: *Determine customer needs.*

Measurement Criteria: *Locate and confirm customer contact and sales information.*

Measurement Criteria: *Determine and explain status of customer orders/purchases, transportation arrangements, and schedules.*

Pathway Topic: Sales and Service

Measurement Criteria: *Identify potential or actual problems in providing customer products/services according to agreed arrangements and schedules.*

Measurement Criteria: *Develop solutions to meet customer needs.*

Measurement Criteria: *Document customer service solutions (e.g. memo, report)*

Measurement Criteria: *Present and explain solution to customer and sales/customer service team.*

Section IV – O*NET Crosswalk Report

Career Specialty/ Occupational Coding and Crosswalk

Summary

The objective of the Career Specialty/ Occupational Coding and Crosswalk project is to accomplish two basic tasks. The first is to design and establish a classification and coding structure for the States' Career Clusters Initiative. When completed, the classification and coding structure will be compatible with existing occupational classification systems and designed in a manner that allows for easy updating and the flexibility to add additional career pathways and occupational specialties.

Once the first step is completed for each cluster, the second step is to build a linkage system or crosswalk between the new career cluster classification system and the O*NET occupational classification system developed and operated by the U S Department of Labor. O*NET is a nationally recognized taxonomy with detailed descriptions and a rich database of information for each occupation.

Explanation of Crosswalk Table

The attached table lists each occupational specialty and its related O*NET occupation. It is sequenced by career pathway and occupational specialty code. It should be noted that the relationship between an occupational specialty and its related O*NET occupation is often not one-to-one. The O*NET occupation is often much broader covering two or more occupational specialties. In fact, even when multiple occupational specialties are assigned, they may only represent a part of a broader O*NET occupation.

Column 1: Lists occupational specialties that were identified by the Career Clusters Initiative. The occupational specialties are organized by cluster pathways and represent occupational titles with no definitions. They are intended to be a sample of occupations that help define the cluster and pathway.

Column 2: Represents related occupations from the O*NET occupational coding system.

Note: A crosswalk from the occupational specialties to the Classification of Instructional Programs (CIP) codes is forthcoming. The National Crosswalk Service Center is currently developing the CIP to O*NET crosswalk which will be the bridge to the career cluster occupational specialties. You may access this crosswalk in the near future at: http://www.xwalkcenter.org/

Transportation, Distribution, and Logistics Career Cluster: Occupational Specialties and Related O*NET Occupations, Sequenced by Career Pathway and Occupational Specialty Code

	Occupational Specialties		Related O*NET Occupation
Code	**Title**	**Code**	**Title**
16.10000	**Transportation Operations Pathway**		
16.10010	Transportation managers, air transportation	11-3071.01	Transportation Managers
16.10020	Airplane pilots/copilots	53-2011.00	Airline Pilots, Copilots, and Flight Engineers
16.10030	Commercial pilots	53-2012.00	Commercial Pilots
16.10040	Flight engineers	53-2011.00	Airline Pilots, Copilots, and Flight Engineers
16.10050	Flight attendants	39-6031.00	Flight Attendants
16.10060	Dispatchers, air	43-5032.00	Dispatchers, Except Police, Fire, and Ambulance
16.10070	Traffic managers, air transportation	53-2022.00	Airfield Operations Specialists
16.10080	Air traffic controllers	53-2021.00	Air Traffic Controllers
16.10090	Aircraft cargo handling supervisors	53-1011.00	Aircraft Cargo Handling Supervisors
16.10100	Airfield operations specialists	53-2022.00	Airfield Operations Specialists
16.10110	Other airlines operations and support jobs	99-9999.00	To broad to classify to a specific O*NET occupation
16.10120	Transportation managers, rail transportation	11-3071.01	Transportation Managers
16.10130	Dispatchers, rail	43-5032.00	Dispatchers, Except Police, Fire, and Ambulance
16.10140	Traffic managers, rail transportation	53-4031.00	Railroad Conductors and Yardmasters
16.10150	Locomotive engineers	53-4011.00	Locomotive Engineers
16.10160	Locomotive firers	53-4012.00	Locomotive Firers
16.10170	Railyard conductors and yardmasters	53-4031.00	Railroad Conductors and Yardmasters
16.10180	Railroad brake, signal and switch operators (including train crew members and yard workers)	53-4021.01	Train Crew Members
16.10180	Railroad brake, signal and switch operators (including train crew members and yard workers)	53-4021.02	Railroad Yard Workers
16.10190	Railyard engineers, dinkey operators, and hostlers	53-4013.00	Rail Yard Engineers, Dinkey Operators, and Hostlers
16.10200	Other railyard and terminal operations and support jobs	99-9999.00	To broad to classify to a specific O*NET occupation
16.10210	Transportation managers, water	11-3071.01	Transportation Managers
16.10220	Dispatchers, water	43-5032.00	Dispatchers, Except Police, Fire, and Ambulance
16.10230	Traffic managers, water transportation	43-5032.00	Dispatchers, Except Police, Fire, and Ambulance
16.10240	Captains water transportation	53-5021.01	Ship and Boat Captains
16.10250	Mates, water transportation	53-5021.02	Mates- Ship, Boat, and Barge
16.10260	Pilots of water vessels	53-5021.03	Pilots, Ship
16.10270	Sailors and marine oilers	53-5011.00	Sailors and Marine Oilers

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Occupational Specialties		Related O*NET Occupation	
Code	Title	Code	Title
16.10280	Able seamen	53-5011.01	Able Seamen
16.10290	Ordinary seamen	53-5011.02	Ordinary Seamen and Marine Oilers
16.10300	Ship and boat captains	53-5021.01	Ship and Boat Captains
16.10310	Ship engineers	53-5031.00	Ship Engineers
16.10320	Motorboat operators	53-5022.00	Motorboat Operators
16.10330	Bridge and lock tenders	53-6011.00	Bridge and Lock Tenders
16.10340	Other port/harbor/waterway/marina operations and support jobs	99-9999.00	To broad to classify to a specific O*NET occupation
16.10350	Transportation managers, road transportation	11-3071.01	Transportation Managers
16.10360	Dispatchers, Truck/bus/taxi, traffic managers	43-5032.00	Dispatchers, Except Police, Fire, and Ambulance
16.10370	Truck drivers, heavy	53-3032.01	Truck Drivers, Heavy
16.10380	Truck drivers, tractor-trailer	53-3032.02	Tractor-Trailer Truck Drivers
16.10390	Truck drivers, light or delivery services	53-3033.00	Truck Drivers, Light or Delivery Services
16.10400	Bus drivers- transit and intercity, road transportation	53-3021.00	Bus Drivers, Transit and Intercity
16.10410	Bus drivers-school	53-3022.00	Bus Drivers, School
16.10420	Taxi drivers and chauffeurs	53-3041.00	Taxi Drivers and Chauffeurs
16.10430	Truck/bus/taxi terminal operations and support jobs	99-9999.00	To broad to classify to a specific O*NET occupation
16.10440	Transportation managers, mass transit	11-3071.01	Transportation Managers
16.10450	Dispatchers, bus	43-5032.00	Dispatchers, Except Police, Fire, and Ambulance
16.10460	Traffic managers dispatchers, rail	43-5032.00	Dispatchers, Except Police, Fire, and Ambulance
16.10470	Traffic managers, road transportation	43-5032.00	Dispatchers, Except Police, Fire, and Ambulance
16.10480	Bus drivers - transit and intercity, transit system	53-3021.00	Bus Drivers, Transit and Intercity
16.10490	Subway and streetcar operators	53-4041.00	Subway and Streetcar Operators
16.10500	Other terminal operations and support jobs	99-9999.00	To broad to classify to a specific O*NET occupation
16.20000	**Logistics Planning and Management Services Pathway**		
16.20010	Logisticians	13-1081.00	Logisticians
16.20020	Logistics managers	13-1081.00	Logisticians
16.20030	Logistics engineers	13-1081.00	Logisticians
16.20040	Logistics analysts	13-1081.00	Logisticians
16.20050	Logistics consultants	13-1081.00	Logisticians

Transportation, Distribution, and Logistics Career Cluster: Occupational Specialties and Related O*NET Occupations, Sequenced by Career Pathway and Occupational Specialty Code

	Occupational Specialties		Related O*NET Occupation
Code	Title	Code	Title
16.20060	International logistics	13-1081.00	Logisticians
16.30000	**Warehousing and Distribution Center Operations Pathway**		
16.30010	Warehouse managers	11-3071.02	Storage and Distribution Managers
16.30020	Storage and distribution managers	11-3071.02	Storage and Distribution Managers
16.30030	Industrial and packaging engineers	17-2112.00	Industrial Engineers
16.30040	Traffic, shipping and receiving clerks	43-5071.00	Shipping, Receiving, and Traffic Clerks
16.30050	Production, planning, expediting clerks	43-5061.00	Production, Planning, and Expediting Clerks
16.30060	First-line supervisors/managers of helpers	53-1021.00	First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers, Hand
16.30070	Laborers, and material movers–hand	53-7062.03	Freight, Stock, and Material Movers, Hand
16.30080	First-line supervisors/managers of transportation and material-moving machine and vehicle operators	53-1031.00	First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators
16.30090	Laborers and freight, stock and material movers, hand	53-7062.03	Freight, Stock, and Material Movers, Hand
16.30100	Car, truck and ship loaders	53-7121.00	Tank Car, Truck, and Ship Loaders
16.30110	Packers and packagers, hand	53-7064.00	Packers and Packagers, Hand
16.30120	Other packaging/packing/material handling and moving jobs	99-9999.00	To broad to classify to a specific O*NET occupation
16.40000	**Facility and Mobile Equipment Maintenance Pathway**		
16.40010	Facility maintenance managers and engineers	11-3011.00	Administrative Services Managers
16.40020	Industrial equipment mechanics	49-9041.00	Industrial Machinery Mechanics
16.40030	Industrial electricians	47-2111.00	Electricians
16.40040	Electrical/electronic technicians	17-3023.00	Electrical and Electronic Engineering Technicians
16.40050	Other facility/terminal maintenance jobs	99-9999.00	To broad to classify to a specific O*NET occupation
16.40060	Mobile equipment maintenance managers	11-3011.00	Administrative Services Managers
16.40070	Electrical and electronic installers and repairers, transportation equipment	49-2093.00	Electrical and Electronics Installers and Repairers, Transportation Equipment
16.40080	Mobile heavy equipment mechanics	49-3042.00	Mobile Heavy Equipment Mechanics, Except Engines
16.40090	Aerospace engineering and operations technicians	17-3021.00	Aerospace Engineering and Operations Technicians
16.40100	Aircraft mechanics and service technicians	49-3011.00	Aircraft Mechanics and Service Technicians
16.40110	Airframe mechanics	49-3011.01	Airframe-and-Power-Plant Mechanics

Transportation, Distribution, and Logistics Career Cluster: Occupational Specialties and Related O*NET Occupations, Sequenced by Career Pathway and Occupational Specialty Code

Occupational Specialties		Related O*NET Occupation	
Code	Title	Code	Title
16.40120	Power plant mechanics	49-3011.01	Airframe-and-Power-Plant Mechanics
16.40130	Aircraft engine specialists	49-3011.02	Aircraft Engine Specialists
16.40140	Aircraft body and bonded structure repairers	49-3011.03	Aircraft Body and Bonded Structure Repairers
16.40150	Avionics technicians.	49-2091.00	Avionics Technicians
16.40160	Ship mechanics and repairers	47-2031.04	Ship Carpenters and Joiners
16.40160	Ship mechanics and repairers	47-2031.05	Boat Builders and Shipwrights
16.40170	Motorboat mechanics	49-3051.00	Motorboat Mechanics
16.40180	Automotive/truck mechanics and body repairers	49-3021.00	Automotive Body and Related Repairers
16.40180	Automotive/truck mechanics and body repairers	49-3022.00	Automotive Glass Installers and Repairers
16.40180	Automotive/truck mechanics and body repairers	49-3023.00	Automotive Service Technicians and Mechanics
16.40180	Automotive/truck mechanics and body repairers	49-3023.01	Automotive Master Mechanics
16.40180	Automotive/truck mechanics and body repairers	49-3023.02	Automotive Specialty Technicians
16.40180	Automotive/truck mechanics and body repairers	49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists
16.40190	Rail car repairers	49-3043.00	Rail Car Repairers
16.40200	Signal and track switch repairers	49-9097.00	Signal and Track Switch Repairers
16.40210	Rail locomotive and car mechanics and repairers	49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists
16.40220	Electronic equipment installers and repairers, motor vehicle	49-2096.00	Electronic Equipment Installers and Repairers, Motor Vehicles
16.40230	Automotive body and related repairers	49-3021.00	Automotive Body and Related Repairers
16.40240	Automotive glass installers and repairers	49-3022.00	Automotive Glass Installers and Repairers
16.40250	Automotive service technicians and mechanics	49-3023.00	Automotive Service Technicians and Mechanics
16.40260	Automotive master mechanics	49-3023.01	Automotive Master Mechanics
16.40270	Automotive specialty technicians	49-3023.02	Automotive Specialty Technicians
16.40280	Bus and truck mechanics and diesel engine specialists	49-3031.00	Bus and Truck Mechanics and Diesel Engine Specialists
16.40290	Motorcycle mechanics	49-3052.00	Motorcycle Mechanics
16.40300	Bicycle repairers	49-3091.00	Bicycle Repairers
16.40310	Tire repairers and changers	49-3093.00	Tire Repairers and Changers
16.50000	**Transportation Systems/ Infrastructure Planning, Management, and Regulation Pathway**		
16.50010	Urban and regional planners	19-3051.00	Urban and Regional Planners
16.50020	Civil engineers	17-2051.00	Civil Engineers

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Transportation, Distribution, and Logistics Career Cluster: Occupational Specialties and Related O*NET Occupations, Sequenced by Career Pathway and Occupational Specialty Code

Occupational Specialties		Related O*NET Occupation	
Code	Title	Code	Title
16.50030	Engineering technicians	17-3022.00	Civil Engineering Technicians
16.50030	Engineering technicians	17-3023.01	Electronics Engineering Technicians
16.50030	Engineering technicians	17-3023.02	Calibration and Instrumentation Technicians
16.50030	Engineering technicians	17-3023.03	Electrical Engineering Technicians
16.50030	Engineering technicians	17-3024.00	Electro-Mechanical Technicians
16.50030	Engineering technicians	17-3025.00	Environmental Engineering Technicians
16.50030	Engineering technicians	17-3026.00	Industrial Engineering Technicians
16.50030	Engineering technicians	17-3027.00	Mechanical Engineering Technicians
16.50040	Surveying and mapping technicians	17-3031.00	Surveying and Mapping Technicians
16.50050	Government service executives	11-1011.01	Government Service Executives
16.50060	Environmental compliance inspectors	13-1041.01	Environmental Compliance Inspectors
16.50070	Air traffic controllers	53-2021.00	Air Traffic Controllers
16.50080	Aviation inspectors	53-6051.01	Aviation Inspectors
16.50090	Traffic engineers	17-2051.00	Civil Engineers
16.50100	Traffic technicians	53-6041.00	Traffic Technicians
16.50110	Motor vehicle inspectors	53-6051.05	Motor Vehicle Inspectors
16.50120	Freight inspectors	53-6051.06	Freight Inspectors
16.50130	Railroad inspectors	53-6051.04	Railroad Inspectors
16.50140	Marine cargo inspectors	53-6051.03	Marine Cargo Inspectors
16.50150	Vessel traffic control specialists	99-9999.00	No comparable O*NET Occupation
16.50160	Public transportation inspectors	53-6051.02	Public Transportation Inspectors
16.50170	Other government agency managers	11-1011.01	Government Service Executives
16.50180	Regulators	99-9999.00	No comparable O*NET Occupation
16.50190	Inspectors, other federal/state/local transportation agency jobs	99-9999.00	To broad to classify to a specific O*NET occupation
16.60000	**Health, Safety and Environmental Pathway**		
16.60010	Manager, safety and environmental	11-9199.00	Manager, All Other
16.60020	Health and safety managers	11-9199.00	Manager, All Other
16.60030	Industrial health and safety engineers	17-2111.01	Industrial Safety and Health Engineers
16.60040	Environmental scientists and specialists	19-2041.00	Environmental Scientists and Specialists, Including Health
16.60050	Environmental science and protection technicians	17-3025.00	Environmental Engineering Technicians

Transportation, Distribution, and Logistics Career Cluster: Occupational Specialties and Related O*NET Occupations, Sequenced by Career Pathway and Occupational Specialty Code

Occupational Specialties		Related O*NET Occupation	
Code	**Title**	**Code**	**Title**
16.60060	Environmental managers and engineers	17-2081.00	Environmental Engineers
16.60070	Environmental compliance inspectors	13-1041.01	Environmental Compliance Inspectors
16.60080	Safety analysts	17-2111.01	Industrial Safety and Health Engineers
16.70000	**Sales and Service Pathway**		
16.70010	Marketing managers	11-2021.00	Marketing Managers
16.70020	Sales managers	11-2022.00	Sales Managers
16.70030	Sales representatives, transportation/logistics services	41-3090.00	Sales Representative, Services, All Other
16.70040	Reservation, travel and transportation agents/clerks	43-4181.02	Reservation and Transportation Ticket Agents
16.70050	Cargo and freight agents	43-5011.00	Cargo and Freight Agents
16.70060	Customer service managers	43-1011.01	First-Line Supervisors, Customer Service
16.70070	Customer service representatives	43-4051.00	Customer Service Representatives
16.70080	Customer order and billing clerks	43-3021.00	Billing and Posting Clerks and Machine Operators
16.70090	Cashiers, counter and rental clerks	41-2021.00	Counter and Rental Clerks

Section V – Cluster Profile
Advisory Committee List

TDL Executive Committee Updated 5/27/02

Name / Title	Organization	Address	Phone	Phone	Email
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TDL Executive Committee Updated 5/27/02

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			4020	4070	
			4020 Number is no longer in service.		
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ADVISORY CONSORTIUM

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Ms.	Donna Brady	AMAC (Airport								

ADVISORY CONSORTIUM

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ADVISORY CONSORTIUM

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ADVISORY CONSORTIUM

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ADVISORY CONSORTIUM

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Mr.	Ronald L. Barnes	Central Ohio Transit Authority	General Manager, CEO	1600 McKinley Avenue	Columbus	OH	43222	614/275-5850	614/275-5894	barnesrl@COTA.com
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Mr.	Stephen J. Trachtenberg	George Washington University	President	2121 Eye Street, NW	Washington	DC	20052	202/994-6500	202/994-0654	
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ADVISORY CONSORTIUM

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Mr.	Tom Surface	COMSAT World Systems	Manager/Media & PR	6560 Rock Spring Dr.	Bethesda	MD	20817	301/214-3419	301/214-7100	
Mr.	Wesley Fondal, Jr.	STARBASE ROBINS, Museum of Aviation	Director	1942 Heritage Blvd.	Warner Robins	GA	31098	912/926-1769		wfondal@hom.net
Mr.	William Buechner	American Road & Transportation Builders Association	Vice Pres., Economics and Research	1010 Massachusetts Avenue, NW, 6th Floor	Washington	DC	20001	202/289-4434	202/289-4435	wbuechner@artba.org
Mr.	William Millar	American Public Transportation Association	President	1201 New York Avenue, NW, Suite 400	Washington	DC	20005	202/898-4020	202/898-4070	wmillar@apta.com

TDL CAREER CLUSTER INITIATIVE
NATIONAL SITES

Ballard High School
1418 NW 65th Avenue - Seattle, WA 98117

Cecil Community College
One Seahawk Drive – North East, Maryland 21901

Davis Aerospace Technical High School
10200 Erwin - Detroit, MI 46224

Great Oaks Institute of Technology & Career Development
3254 East Kemper Road - Cincinnati, Ohio 45241-1581

Mid-South Community College
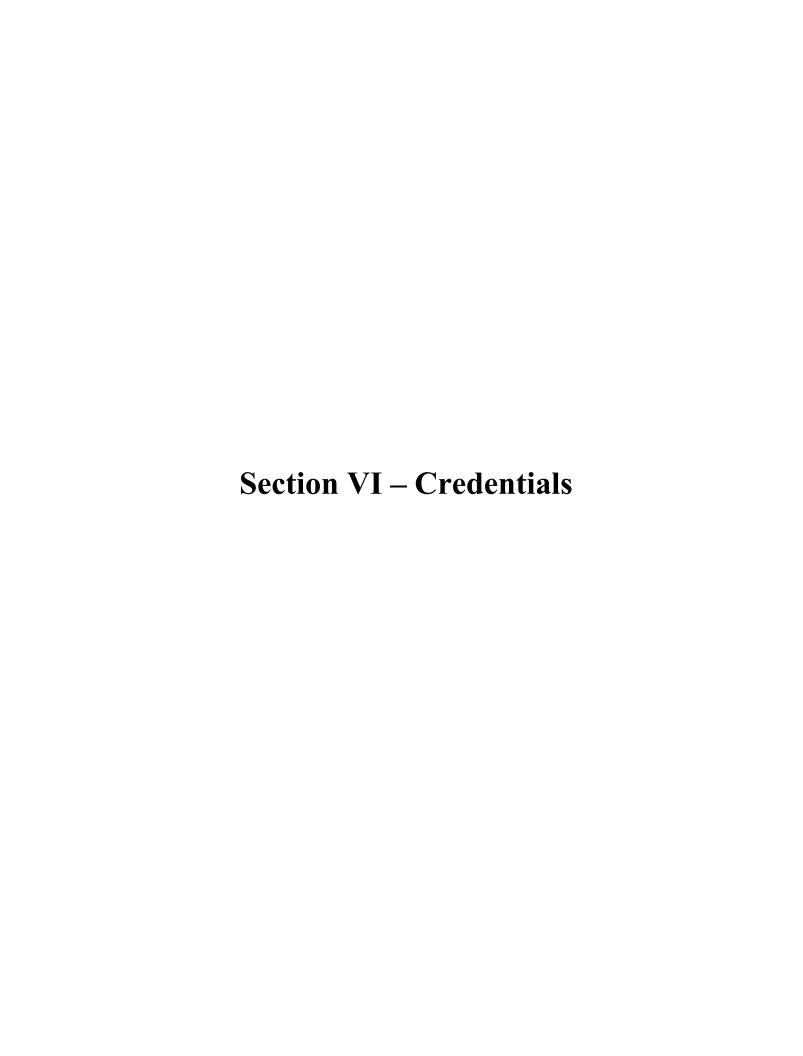2000 West Broadway - West Memphis, Arkansas 72301

Patterson High School
100 Kane Street – Baltimore, Maryland 21224

Superior High School
2600 Catlin Avenue - Superior, Wisconsin 54880

Technology Center of DuPage
301 Swift Road - Addison, IL 60101

TransTech Academy-Cardozo Senior HS
1300 Clifton Street, NW - Washington, DC 20009-7099

Triad High School
703 E. Hwy 40 - Troy, Il 62294

Section VI – Credentials

Transportation Operations

<u>Degrees</u>:

Associate, Bachelor and Graduate Degrees in Business, Logistics, Engineering, or Transportation

<u>Industry and Professional Certifications</u>:

National Private Truck Council

- ❑ Certified Transportation Professional (CTP)

The American Society of Transportation and Logistics

- ❑ Certified in Transportation and Logistics (CTL)

State Licensing Agencies

- ❑ Commercial Drivers License (CDL)

Federal Aviation Administration

- ❑ Commercial Pilot License

Logistics Planning and Management

<u>Degrees</u>:

Associate, Bachelor and Graduate Degrees in Business, Marketing, Logistics, Economics, Engineering, or Transportation

<u>Industry and Professional Certifications</u>:

The American Society of Transportation and Logistics

- ❑ Certified in Transportation and Logistics (CTL)

Materials Handling and Management Society

- ❑ Certified Associate in Materials Handling (CAMH)
- ❑ Professional Certified in Materials Handling (PCMH)

American Production and Inventory Control Society (APICS)

- ❑ Certified in Production and Inventory Management (CPIM)
- ❑ Certified in Integrated Resource Management (CIRM)

International Society of Logistics (SOLE)

- ❑ Certified Professional Logistician (CPL)

Institute of Packaging Professionals

- ❑ Certified Packaging Professional (CCP)
- ❑ Certified Professional in Training (CPT)

National Society of Professional Engineers

- ❑ Professional Engineer (PE)

Warehousing and Distribution Center Operations

<u>Degrees</u>

Associate, Bachelor and Graduate Degrees in Business, Logistics, Engineering, Engineering Technology or Transportation

<u>Industry and Professional Certifications</u>

Materials Handling and Management Society

- ❑ Certified Associate in Materials Handling (CAMH)
- ❑ Professional Certified in Materials Handling (PCMH)

American Production and Inventory Control Society (APICS)

- ❑ Certified in Production and Inventory Management (CPIM)
- ❑ Certified in Integrated Resource Management (CIRM)

International Society of Logistics (SOLE)

- ❑ Certified Professional Logistician (CPL)

Institute of Packaging Professionals

- ❑ Certified Packaging Professional (CCP)

❑ Certified Professional in Training (CPT)

National Society of Professional Engineers

❑ Professional Engineer (PE)

Facility and Mobile Equipment Maintenance

Degrees:

Associate, Bachelor and Graduate Degrees in Business, Engineering, or Engineering Technology

Industry and Professional Certifications:

Apprenticeship Programs

❑ Journey-level certifications (e.g., industrial electrician, maintenance mechanic)

Society of Maintenance and Reliability Professionals

❑ Certified Maintenance and Reliability Professional (CMRP)

Federal Aviation Administration

❑ FAA Mechanic Certificate (Airframe/Powerplant)

National Institute for Automotive Service Excellence (ASE)

❑ ASE Automobile Technicians
❑ ASE Collision Repair/Refinish Technicians
❑ ASE Medium/Heavy Truck Technicians

National Society of Professional Engineers

❑ Professional Engineer (PE)

Health, Safety and Environmental Management

Degrees:

Associate, Bachelor and Graduate Degrees in Business, Sciences, Engineering or Engineering Technology

Industry and Professional Certifications

Academy of Board Certified Environmental Professionals

❑ Certified Environmental Professional (CEP)

Council on Certification of Health, Environmental and Safety Technologists (CCHEST)

❑ Occupational Health and Safety Technologist (OHST)

Board of Certified Safety Professionals (BCSP)

❑ Certified Safety Professional (CSP)

American Board of Industrial Hygiene (ABIH)

❑ Certified Industrial Hygienist (CIH)

Transportation Systems/Infrastructure Planning, Management and Regulation

Degrees:

Associate, Bachelor and Graduate Degrees in Business, Logistics, Sciences, Engineering, Engineering Technology, Transportation, Urban and Regional Planning, or Public Administration

Industry and Professional Certifications

American Institute of Certified Planners

❑ Certified Planner (CP)

Transportation Professional Certification Board

❑ Professional Traffic Operations Engineer (PTOE)

Community Transportation National Certification Council

❑ Certified Community Transit Manager (CCTM)

National Society of Professional Engineers

❑ Professional Engineer (PE)
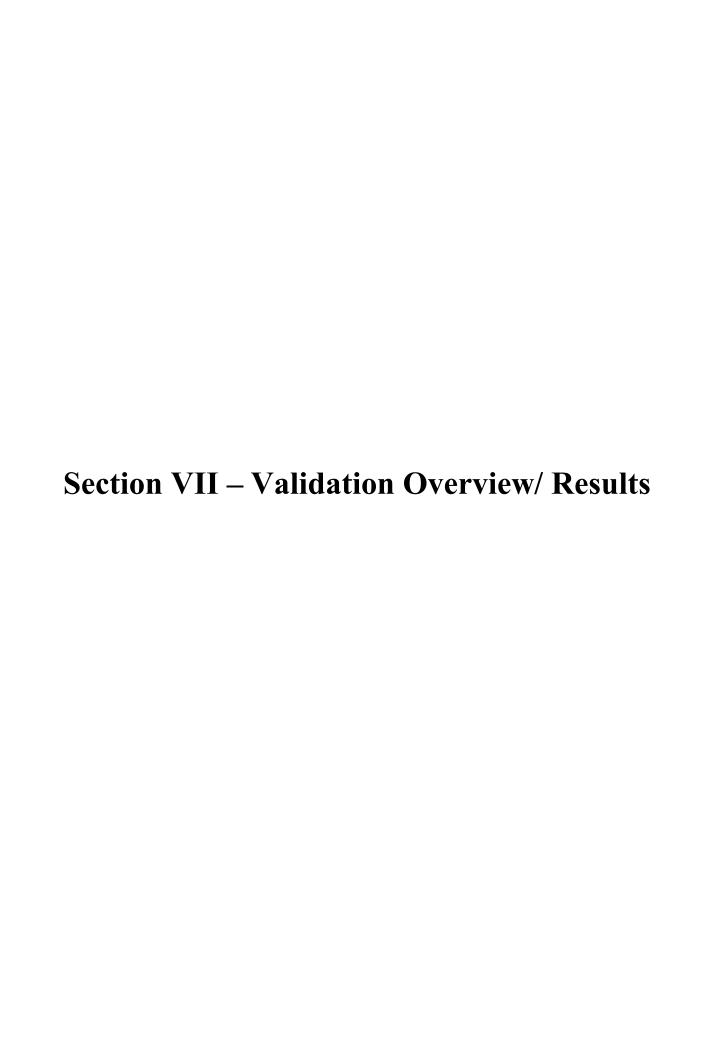
Sales and Service

<u>Degrees</u>:

Associate, Bachelor and Graduate Degrees in Business, Marketing, or Hospitality and Tourism.

<u>Industry and Professional Certifications</u>

Institute of Certified Travel Agents

❑ Certified Travel Associate
❑ Certified Travel Counselor
❑ Destination Specialist

Section VII – Validation Overview/ Results

Transportation, Distribution and Logistics
Career Cluster Validation Synopsis

After research and development of the Foundation and Pathway Knowledge and Skills, the validation process included three phases to obtain both qualitative and quantitative information. Phase one included a review and general comment period that was conducted for business, industry and education partners of the National Transportation, Distribution and Logistics Career Cluster Executive Committee and Advisory Consortium.   Phase two addressed the content and appropriateness of the drafted Foundation and Pathway Knowledge and Skills. It included the nine national pilot sites and their state and local partners. Paper pencil surveys and guided discussion groups were held at sites across the country. Phase three included a national web-based survey to obtain additional information and comment from the Executive Committee, Advisory Consortium, field experts and the transportation community. The web-based survey gathered information relative to the importance level of the Knowledge and Skills for learners to be successful in the cluster and as well as obtained general suggestions for revision on the content.

Section VIII – Assessment Protocol
Certification Protocol

Deliverable #7
Title: Protocol for Career Clusters Assessment
8/5/2002 4:00 PM

Definition of Career Clusters Assessment

Assessment, within the context of the Career Clusters Initiative, is defined as *a **measurement** of what a learner should know and be able to do*. The academic and technical knowledge and skills common to all occupations and pathways within a single cluster are initially addressed in the Career Clusters Initiative. Each cluster measures or assesses a learner's knowledge and skills related to the cluster.

Purpose of the Protocol for Career Clusters Assessments

The purpose of this document is to provide:
- Minimum criteria for selecting existing assessment instruments that align to the academic and technical knowledge and skills identified for each cluster.
- Minimum criteria for developing new assessment instruments that align to the academic and technical knowledge and skills identified for each cluster.
- Minimum criteria for validating and determining reliability of assessment instruments.

Functions of Career Clusters Assessment

Career Cluster Assessment serves to
- *measure* (assess) *student achievement*, both cognitive and performance, in areas of academic and technical knowledge and skills for each cluster
- *provide the basis* for a transportable, industry-endorsed certification.

Operational Guidelines for Career Clusters Assessment

This protocol includes minimum criteria/expectations career cluster designers need to apply in the selection/development of assessment modalities. Career clusters assessment:

CONTENT
- measures all 10 Foundation knowledge and skills.
- customizes context of questions and applications to individual clusters.
- reflects a high degree of specificity of measurable knowledge and skills.
- aligns to academic standards.
- connects to post high school standards and competencies.
- is consistent with Perkins data-quality criteria.

FORM
- combines a minimum of two modalities: cognitive and performance.
- includes an item bank that can accommodate multiple applications.
- reflects quality design and clear formats.

APPLICATIONS AND USES
- offers diagnostic feedback to the learner.
- provides added value to the user (employer, post high school); not required for employment.
- affords portability of results.
- provides cues for instruction.

ADMINISTRATION
- validates identity of test takers through a secure system.
- affords flexible administration, e.g. single assessment per foundation cluster topic or combination of topics.
- provides flexible timing for administration.
- affords no cost or low cost to students.
- includes an affordable, user-friendly process to cover administrative costs.
- reflects an administration process that is as consistent as possible with other career cluster assessments.
- includes an affordable, user-friendly maintenance process.

VALIDITY AND RELIABILITY
- uses consistent, reliable, and technically strong elements.
- is recognized by business and industry.
- is recognized by post high school education and training.

Deliverable #8
Title: Protocol for Career Clusters Certification
8/23/2002 2:28 PM

Definition of Career Clusters Certification

Certification, within the context of the States' Career Clusters Initiative, *documents* learner achievement of the academic and technical knowledge and skills common to all pathways and occupations within a cluster. It is based on valid and reliable assessments. A certificate is recognized by employers, secondary education, and post high school education as "value added to the admissions process to further education, immediate employment process, and/or to employment advancement".

Purposes of the Protocol for Careers Cluster Certification

The purposes of this document are to provide:
- Minimum criteria for selecting existing certification programs that align to the academic and technical knowledge and skills identified for each cluster.
- Minimum criteria for developing new certification programs that align to the academic and technical knowledge and skills identified for each cluster.
- Minimum criteria for determining the value of a certification program.

Functions of Career Clusters Certification

Career Cluster Certification serves to provide a consistent, transportable method of documenting learner achievement of a Career Cluster's validated academic and technical knowledge and skills. The system is based on valid and reliable assessments.

Operational Guidelines for Career Clusters Certification

This protocol includes minimum criteria/expectations career cluster designers need to apply in the selection/development of certification processes. Career clusters certification:

- Defines the purpose and scope of the certificate.
- Bases issue of the certificate on assessed learner proficiencies and competencies related to a Career Cluster's validated academic and technical knowledge and skills.
- Requires learner to meet the assessment benchmark identified.
- Informs the public concerning the knowledge and skills of the certificate holder.
- Indicates date of issue on the certificate.
- Issues certificate from the State (State Director of Career-Technical Education or appropriate designee) if the issuing organization is a secondary or post secondary education institution.
- Issues certificate from the CEO (or an appropriate designee) of an issuing professional organization/agency/institution/company.
- Requires issuing organization to maintain a database (state and/or national) of certificate holders based on the respective term of renewal.